



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

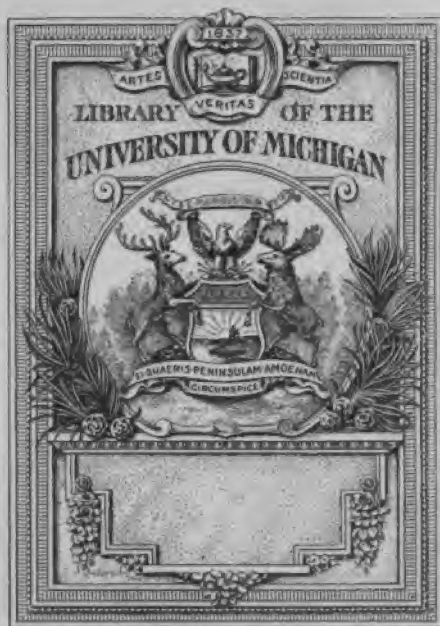
We also ask that you:

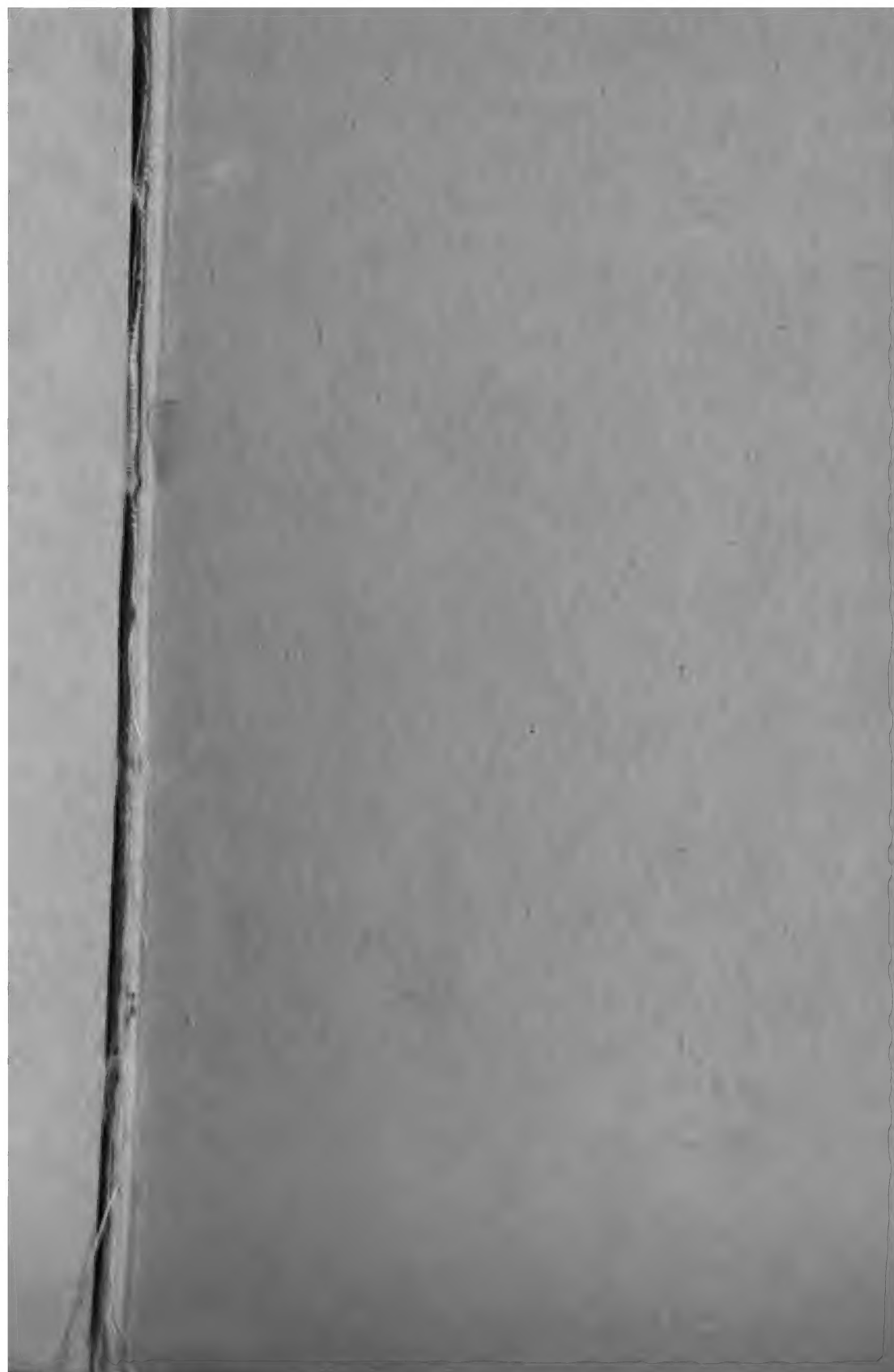
- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

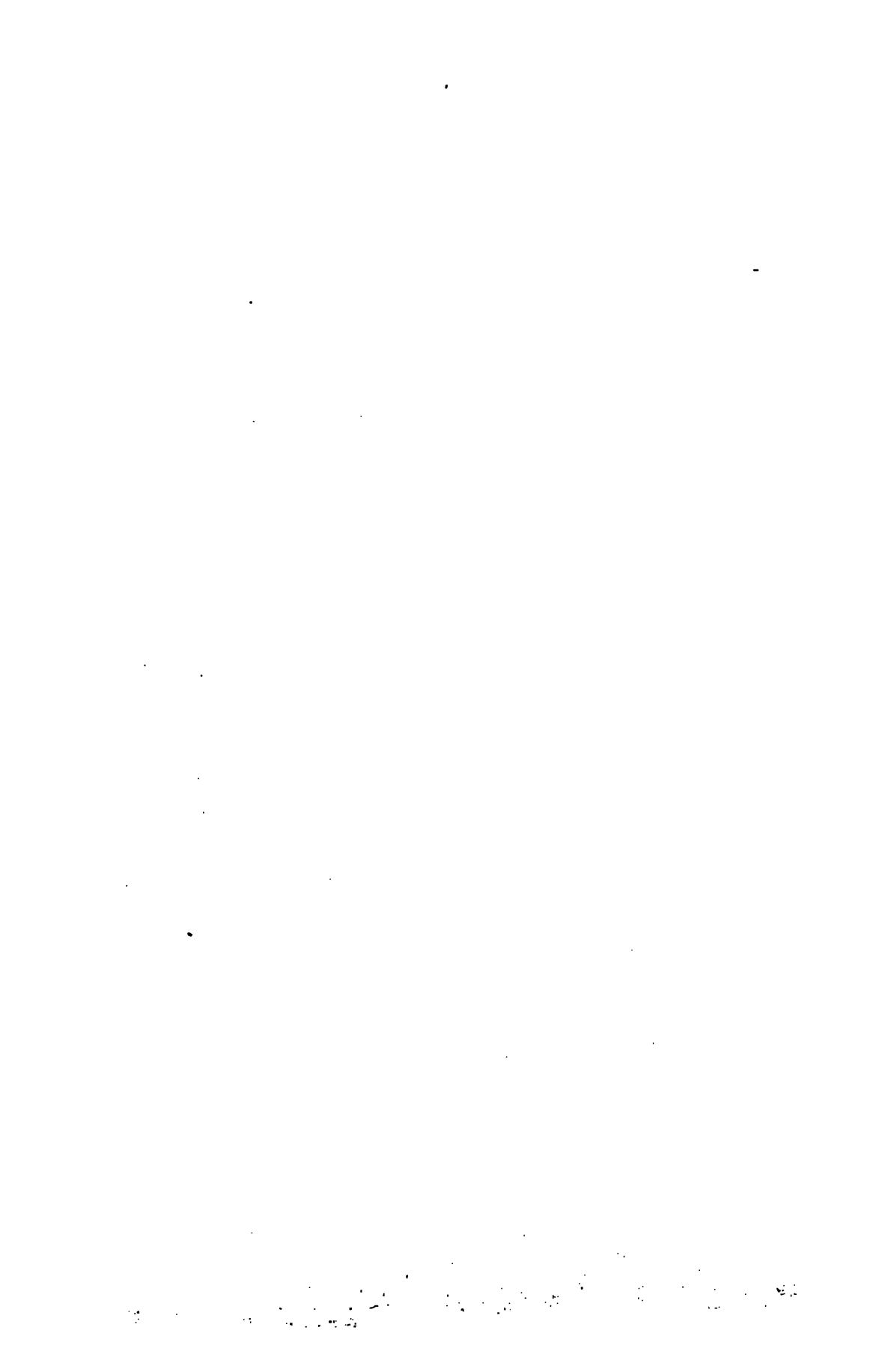
About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>

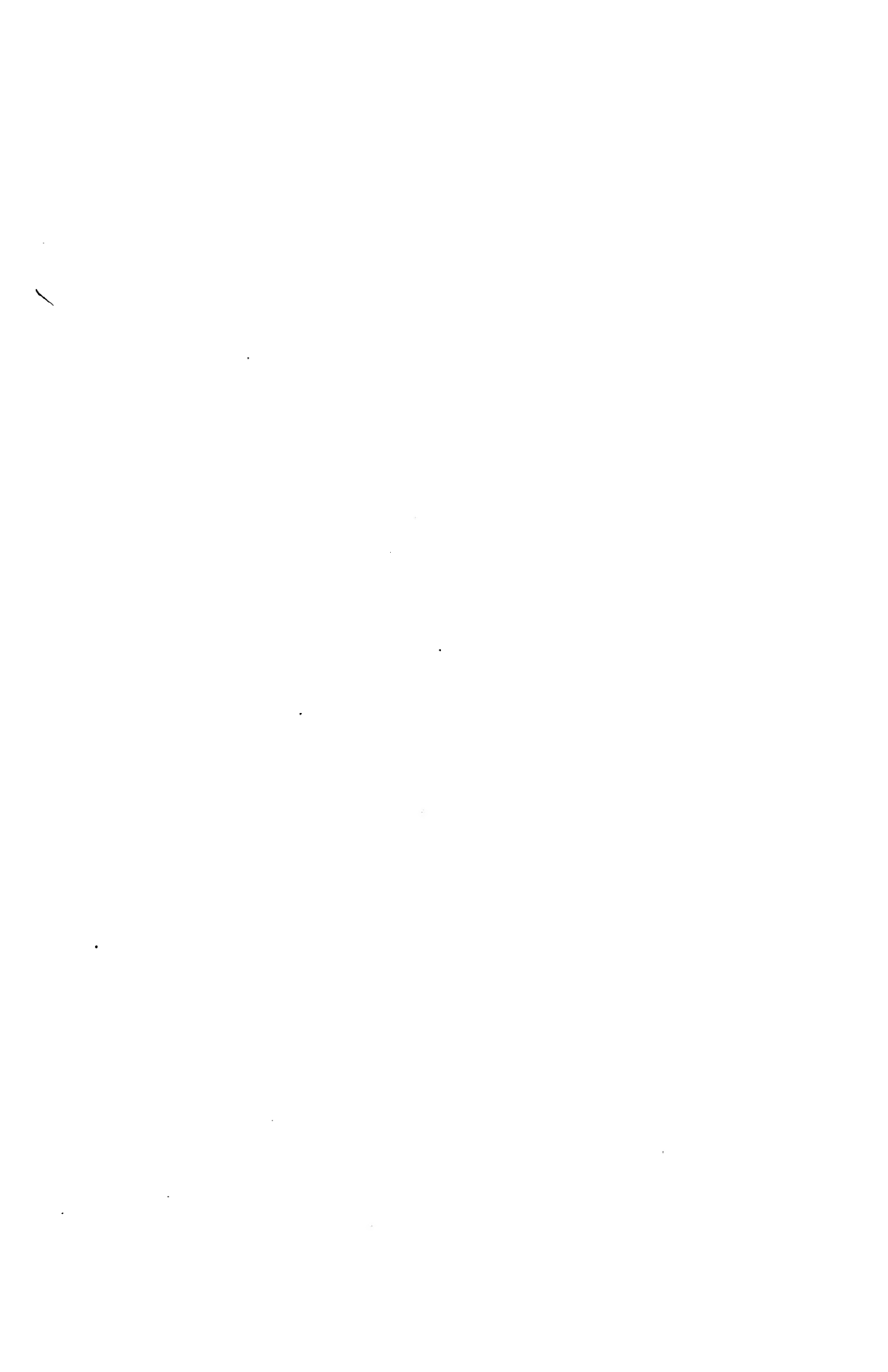








THE JOURNAL OF PHILOSOPHY
PSYCHOLOGY AND SCIENTIFIC METHODS



1451
THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY

AND

SCIENTIFIC METHODS

EDITED BY

FREDERICK J. E. WOODBRIDGE

AND

WENDELL T. BUSH

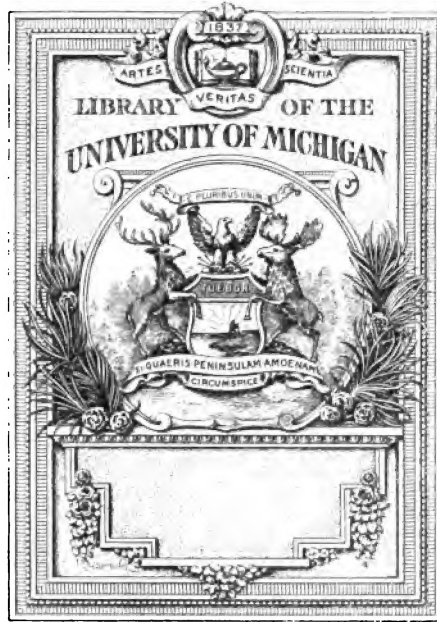
VOLUME III

JANUARY-DECEMBER, 1906

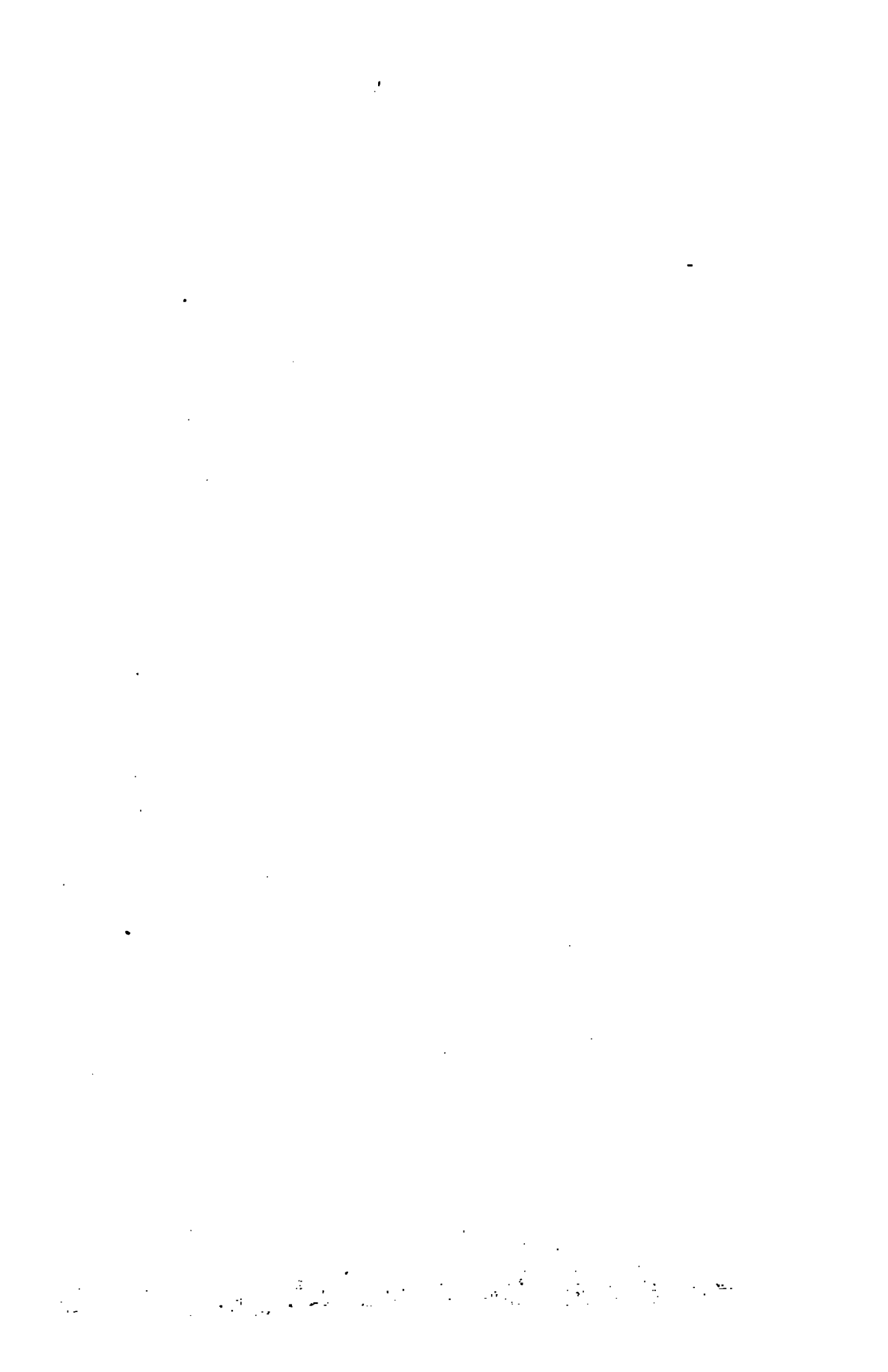
NEW YORK

THE SCIENCE PRESS

1906







THE JOURNAL OF PHILOSOPHY
PSYCHOLOGY AND SCIENTIFIC METHODS

¹⁴⁸¹
THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY

AND

SCIENTIFIC METHODS

EDITED BY

FREDERICK J. E. WOODBRIDGE

AND

WENDELL T. BUSH

VOLUME III

JANUARY-DECEMBER, 1906

NEW YORK

THE SCIENCE PRESS

1906

1451
THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY

AND

SCIENTIFIC METHODS

EDITED BY

FREDERICK J. E. WOODBRIDGE

AND

WENDELL T. BUSH

VOLUME III

JANUARY-DECEMBER, 1906

NEW YORK

THE SCIENCE PRESS

1906

Press of
The New Era Printing Company
Lancaster, Pa.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

THE TRANSCENDENCE OF KNOWLEDGE

AS an unaccounted-for agent of protest, the transcendence of knowledge has been playing a rôle like that of the moral conscience. Pragmatically, it is definable as something which embarrasses every newly proposed division of experience. The former division of experience into *ideas* had grasped a very real unit, but not the elusive thing that makes knowledge knowledge. Empiricism at present, in practise, divides experience into *experiences*, outlining a given judgment, for instance, as 'an' experience. The validity of the judgment is hereby confined inevitably to its psychological career, and the sense of the truth-error contrast is lost. The meaning of 'a cognitive experience,' referring beyond itself for verification or correction, can not accommodate itself to these limits: such is Professor Bakewell's contention.¹ But empiricism has still a third category of division: experience is a genus; there are several *kinds of experience*, of which cognition is one, coordinate and alternative with the rest.² Granting the category, exception is taken to the implied ranking in behalf of the transcendence of knowledge. For these several kinds are presumably known or knowable, i. e., embraced or embraceable in a cognitive experience, and without alteration; hence cognition can not be of the same stuff or in the same field with

¹ This JOURNAL, Vol. II., No. 19, p. 521.

² It is not difficult to recognize here the problem of Brentano, and to some extent his solution. For Brentano, the ultimate consideration in psychological classification is the *mode* in which consciousness refers to its object, *Urteil* being but one of these modes. For Dewey, the real is 'that which is experienced, as it is experienced,' that is, experience has a *what* and a *how*,—ultimate characters, not reducible to one another—and cognition is but one of several *hows*, *modes*, or *sorts*. This word in whatever form—kind, mode, quality—is always a word of last resort in classification. A doctrine which falls back upon it is essentially empirical, and the test of such a doctrine lies in the attempt to reduce the alleged ultimate 'sorts' to one, whether of their own number or otherwise. (Professor Dewey's article in Vol. II., No. 24, of this JOURNAL, tends to modify somewhat this interpretation of his position. I let the comment stand for what it is worth.)

any other 'sort.' Indeed, the distinguishing mark of its sort, if we are so to speak of it, must be negative—it is stuffless, not to say unconscious. With this touch of paradox in characterizing the experience which once enjoyed the status of *consciousness par excellence* Professor Woodbridge³ has taken an important step toward meeting Professor Dewey's requirement that the transcendence of knowledge shall appear and be defined: transcendence is non-appearance; knowledge, as a peculiar sort, is non-phenomenal.

If this be true it is not obvious how Professor Dewey's other requirement, that cognition *per se* be subjected to empirical study, is to be complied with. The foregoing results are all gotten by logic and are all negative. It is indeed impossible to determine empirically whether or not cognition alters its object; the difficulty lies in gaining knowledge of the object apart from cognition. But it is possible to observe the development of experience (a) from *Vorstellung* to *Urteil*, (b) from problematic judgment to verified judgment, (c) from an attitude in its first intention ethical, esthetic or otherwise to self-consciousness, *i. e.*, to reflexive judgment upon that experience; and it is possible to distinguish the invariant from the variable elements in that development. These are all experiences which rise to the point of cognition, properly so called, from something else or from something less. The result of such observation is partly to confirm and partly to correct the results of the aforesaid logic.

I.

It is the nature of knowledge to *supervene* upon an experience that is not yet knowledge. At the moment of cognition, that is, at the moment of judgment, or of certainty, a distinct change takes place in experience, but it takes place upon an invariant core: the experience which at that moment becomes 'object' in full standing is undisturbed in quality, intensity and continuity with its context. These inclusive and non-interfering characters of cognition seem especially conspicuous in the case of reflexive judgments; but they are equally true of all judgments of current experience. Every cognizance of an object is expressible in terms of the judgment, *Ab* (the Thing *A* with the predicate *b*) *is*: and by that '*is*' purports to come upon and report the thing as independent of and beyond—not experience, but the act of judging. If by transcendence we mean these non-displacing, non-transforming, transparent, superventive characters of the cognitive experience, transcendent is a title which can not be denied it.

From this account it may appear (1) that experience and cognition are by no means coextensive, and yet (2) that cognition is the

³ This JOURNAL, Vol. II., No. 21, pp. 573 ff.

consummation of every other experience. That my present experience in so far as it is immediate or uncertain should pass into an object-experience and be knowledge or known is an ideal of every moment. Objectification is in some sense a step nearer reality, though it be, with Münsterberg, in another respect a step away therefrom. Further, it is but the obverse of the frictionless supervening of knowledge that every experience is from its incipency adapted to be known; it comes into existence bearing the organ of attachment for knowledge, the schema of knownness, in situ *at its outside*, so that only a change in the lighting, the suggestion of a question perhaps, is necessary to make the inclusive cognition appear. If, then, we admit vanishing degrees of knowledge, we may still say that all experience is cognitive *quâ known*: at least a surface-film of knowing plays over every inch of its contour. This position of primacy should also be taken up into the concept of its transcendence.

But what is it that supervenes? Are we unable empirically to get beyond the negative results of our logic? If cognitive experience, like other experience, is essentially subject to be known and under the same condition that it shall not be altered; if, therefore, in being known it must retain the transparent, non-evident character which differentiated it from known experience, it can not be known. Is this the conclusion? The doubt which such a knot creates about the finality of our contrast between stuff of experience and stuffless experience is strengthened by the following facts. There is no experience, whether cognitive or otherwise, which may not in turn be made subject to ethical consideration or esthetic judgment; and in these value-experiences, just as in cognitive experience, the object-experience must exist unaltered. Whatever title the cognitive experience may have had to transcendence must be shared equally with these others. And while the several kinds of experience seem to make for hierarchy and unity rather than for severalty and coordinacy, that hierarchy is ambiguous. But if the relative transparency which we called transcendence pertains to value-experience with reference to *its* material core or object quite as much as to cognitive experience with reference to *its* core, then none of these transcendencies can be unconscious-experiences—in the sense of experiences without content—otherwise there would be several distinguishable kinds of unconscious experience, which is absurd. And this is, indeed, the crux of the problem: how cognition as a peculiar type of experience can be referred to anything of the 'content' class; and the perplexity of it lies, I believe, in misapprehending the conditions of translating knowledge into terms of the category 'experience,' a category whose claim to ultimateness is yet to be made good.

II.

Cognitive experience, as a category, is a reflexive and secondary accomplishment of the mind. This does not mean that it is a creation, nor that it is a discovery, as of some elusive and almost invisible content, but that it is *as a category* an after-view. In direct living we are in presence of *things*; we know nothing of *cognition*. The cognitive experience, as direct, reports not itself, but its object; and its most immediately empirical language is, 'The thing is,' or 'is here,' or 'I know the thing,' but never 'The thing is held in cognitive experience.' Whatever the change may be that makes this last language possible, it is a change which throws into relief a new *environment of the object*. Previously, a thing was known by virtue of its simple presence;⁴ now it is seen to be known quite as much *by virtue of the presence of something else than itself*. The necessary conditions of knowledge are, first, that the thing known be present in some way in the stuff of experience; but, second, that it be present under *specific inner auspices*. Knowledge, from this angle, is no longer transparent, and its transcendence is wrapped up in these now visible auspices of the thing therein known. In fact, it is here that we come upon that ingredient of transcendence which Professor Bakewell has brought into the field: to this envelope, as other than the experience known, is referable in some way that 'pointing beyond itself' which is characteristic of experience as known.

Neither the office nor the precise relevance of this environing something-else has yet its perfect explanation. The essential phenomena broadly described are these: In the case of sense impressions, this contextual furniture, in the rôle of fringe, or perhaps of conductor for pragmatic radiations, has something to do with lifting that impression—in its own right a mere immediate sign—to the dignity of 'object.'⁵ The more elaborate experiences, in their immediate (as yet unknown, but knowable) condition, are like nascent atoms or chemical radicals with unsatisfied valences, which require only the juxtaposition of their proper 'others' to enter into the state of knownness.⁶ In sum, and apart from all theories, it is an empirical datum that without the presence of 'other contents,' be their

'The thing *Ab* is' = 'The thing *Ab* (here now) is (beyond here-now)' = 'I know *Ab*,' in which the 'I' absorbs merely the here-now elements, and the 'know,' the not-here-now elements, of the original 'is.' It is as if one had said cabalistically, 'Here not-here *Ab*.'

⁴In which the paradox of placing the burden of objective reference upon what is, *by the only possible distinction*, inner, has to be met.

⁶In which the paradox of placing the burden of cognition, regarded as a function, upon contents which are *prima facie* irrelevant to the object, has to be met.

action no more than catalytic, is nothing known that is known. And the essential difficulty of the situation is that of empowering these other contents of experience at the moment of cognizance with any other value than that of plain *other contents*; whereas it is precisely *not* in their capacity as other contents that they are *functional in knowing* the given object of attention. It is here that association fails, and that the other theories which have superseded it share in its failure: they assume that whatever knowing-power these other contents have lies in their face- or content-value as like, contiguous; or in some way of kindred motive, to the contents known. They thus assume a double knowledge to explain a single one. If it were possible so much as to conceive contents, as such face-values, actively engaged in 'knowing' incoming contents, such a cognitive experience would by no means be transparent to itself; these other contents would be part of the defined object, contrary to hypothesis. This entire landscape of face-value-meanings (upon which aspect of experience the thought of the psychological empiricist tends to terminate) is barren for the understanding of cognition: everything here is a logical flatwash within which the essential epistemological distinctions of true and false, certain and uncertain, inner and outer, ideal and real, can find no tenable hold. In whatever sense it is possible to speak of knowing as an experience, in that sense it is necessary to regard it as a *process* with a physiology of its own; in whatever sense it is possible to regard knowing as a process, it is necessary to distinguish *functions* that conspire in that process; and since functions are non-empirical (not to say metaphysical) things, it is necessary to find *structural differentiations* in experience as their empirical signs. It is not the stuff, primarily, but the structure of experience which is significant for the description of knowing—the stuff only as embodying or manning the structure. An object is known not alone by virtue or presence in experience, nor by virtue of the presence of something else, but by virtue of being taken up into the structure of experience as, at that moment, a specific organ thereof.⁷

⁷ It is a fair subject for possible experiment how much of the self could be of different stuff without affecting a given cognition. It might seem that any substitution of content would alter the new object in some degree; but the identity of a judgment is determined solely by the placing which it effects, and it is conceivable that there might obtain a perfect interdependence of superficial contents of experience, and yet a large degree of indifference thereto in the course of judgments. The removal of an office from a noisy to a quiet quarter would doubtless have an effect on the average of the bookkeeper's errors; but there is a conceivable range of variation in the auditory context whose effect on a particular series of judgments would be not approximately, but absolutely, *nil*.

III.

If this is the right methodic clue a little rapid sketching ought to make definite what we mean by the transcendence of knowledge. Knowing, as process, is essentially the work of placing a given experience within the entire system of experience. For the placing of a given experience it is a matter of relative indifference *what* its immediately neighboring experiences have been and are; absolutely necessary is only *that* they be, and that a *systematic continuity* exist between them and such other past or present experiences as in structural order belong nearest the experience to be known. Abstractly, this continuity is the sufficient as well as the necessary condition for accurate knowledge; but the conductivity of experience, so to speak, is imperfect. Hence error; and hence it is that an experience is never finally known until it has been experienced *as* neighbor to all its possible systematic neighbors. Experience never presents all these combinations; and such as it presents are distributed unevenly; things in physical groups have enormously better natural chances for getting into correct order, in all the various series that pass through them, than have esthetic experiences, for instance. But in any case the thing that makes knowledge knowledge is the structural interest in the whole interplay between focal and environing materials in experience.⁸

The various aspects of the transcendence of knowledge, then, come naturally together as follows: (1) Knowing is transparent in action, *i. e.*, structure and function are not visible in experience as materials in the same field with the contents then and there being placed; structure is relatively abstract, function (if we dare say so) relatively metaphysical, and both relatively independent, with reference to these contents. (2) Knowing concerns materials beyond those belonging to the presented object. It is possible to locate at a particular point in the time-field, etc., the subject-matter of an act of knowledge; but the act of knowledge can not itself be located: it is omnipresent. If, indeed, we prefer here to extend the range of the word 'present' rather than use the word 'transcendent,' we may do so. In knowing a physical object, we are indeed in presence of the whole of space; and our experience of space is not an aggregate of numerous experiences, but is one continuous experience from birth

⁸ Structure, in the person of the environing contents, acts, and in the person of the focal contents is acted upon: the thing is 'understood' to a degree, and to a degree means a new line in structure for further understandings. These are the fundamental functional relations in knowledge. A cognitive experience is *true* when environing materials can assume focal functions without altering the established systematic relations. See this JOURNAL, Vol. II., No. 18, pp. 480-482.

to death. But with this understanding of presence, we should have to distinguish various 'presences,' the psychological moment of judgment indicating the minimal and nuclear presence with which that cognition is concerned. Knowing does not change its object; it creates it. It neither changes nor creates the stuff of experience. The object is created not as subject-matter, or stuff, but (a) as an outlined mass of stuff (b) having its roots in the remote corners of the real universe of my experience. The structure of experience *as belonging to the object* is the accomplishment of the knowing process: in this respect the object likewise is omnipresent, and by no means confined to the psychological here-now.*

'Of what sort,' then, 'is cognitive experience?' The possibility of knowing knowledge depends on the fact that the structure of experience, as concerned in the knowing of physical things, is compoundable: the situation between contents and 'other contents' observable in the current cognition of things may be repeated as between this whole situation and still other contents. Cognition, as a *sort*, is known, therefore, with reference to a world that envelopes it. What is this world beyond cognition? Is it the world of the value-judg-

*In psychological reflection the stuff actually belonging to the object appears to diminish. The nucleus of presented material that has prompted a given judgment may turn out to be surprisingly small. All the further material that went to fill out its rounded objectivity has lost itself in the environing arena or penumbra, which under the same sort of scrutiny attains proportions equally surprising, as if in compensation. In brief, the original object appears dismembered and unrecognizable. In view of this, Professor Münsterberg does not hesitate to use the word transformation: real is the object as we experience it in the full current of (what I beg leave to call) teleological synthesis; the scattered elements which psychological reflection discovers are artifacts.

Apart from the language of illusion in such a view of cognition so much is unimpeachable: Each thing as known in experience is not known at any psychological point, but has its roots in the utmost corners of the eternal person. Reflection finds members of what was a unitary stroke of cognition dispersed throughout the whole universe of a mind, though the thing known has its nuclear sign at a particular point in that universe.

But the hypothesis of transformation has no enlightening power. It is requisite, and, therefore, possible, to express the facts of cognition in terms of experience without losing grasp upon the conceptual identity¹ of contents. The situation is analogous to that which gives rise in the physical world to the problem of *actio in distans* and the comment of Carlyle is equally to the point: 'You say a thing can not act where it is not—with all my heart, but pray where is it?' There is this difference, however, that whereas hypothesis is the essence of physical construction, the elements with which a theory of knowledge deals must remain real *as experienced*.

ment, perchance, or the world of feeling? Doubtless these are structural neighbors of cognition in certain series.¹⁰

But it must be noted that this 'world beyond' is not a fixed order: these kinds of experience seem to a certain extent to play the rôle of world beyond *for each other*, so that cognitive experience is known by value experience, and value experience in turn by cognition. This suggestion receives some color from the apparent need of explaining the norms of cognition, if at all, by the norms of action (pragmatism, action theory, etc.), and the ethical 'ought' by an 'is.'

WILLIAM ERNEST HOCKING.

ANDOVER.

PSYCHOLOGY AND THE LOGICAL JUDGMENT WITH REFERENCE TO REALISM

IN various quarters there has lately been a renaissance of 'realism' so called. Mr. G. E. Moore's realism of concepts is made the epistemological basis of Mr. B. Russell's imposing work 'The Principles of Mathematics,' and it finds an answering echo in this country. Professor Woodbridge proclaims himself a realist and asserts that the addition of knowledge to a reality hitherto without it is simply an addition to it and not a transformation of it. Dr. Montague tells us that consciousness is simply a relation between things, but does not tell what is the *differentia* of this peculiar relation by which things get a cognitive consciousness added to them. Presumably things would be just the same without consciousness and, if so, why and how does this peculiar relation called consciousness get superimposed on reality? How does consciousness get born into a world that would perhaps get along better without this disturbing factor which can not seem to rid itself of the illusion that it too has a determinate reality? Again we seem to have another variant of realism in the 'immediate' empiricism of Professors Dewey and James, who agree in eliminating the transcendent reference from cognition.

I confess at the outset that I have not been able to make out just what these various writers mean by realism. For Professor Woodbridge and Dr. Montague cognitive thought seems to be an epiphenomenon; for Professors Dewey and James, a single phase of immediate psychic process on a level with all other psychic processes.

¹⁰ It is worth while observing that the fact that an object is known never as a species, but always as an individual, plays a rôle in the knowing of knowing different from the rôle it plays in the knowing of anything else; knowing is known *always in particular acts, and it is known first as physical knowledge*. Knowledge of the last attained degree of reflection can not, in the nature of the case, be known and reckoned with the species.

Now, the Platonic view aside, realism in *epistemology* means that human thought somehow gets into right relation with reality, whereas realism in *metaphysics* means that the real is wholly external to and independent of thought. And in recent discussions one seems to find a confused shifting from one to the other of these uses of the terms. I suppose we are all realists in the sense of holding that cognitive thinking is not shut up with itself as a psychical process, but is in contact with a real world. But if it be maintained that there is a real world entirely independent of thought which may be passively mirrored or represented in thought, but which in itself goes on entirely irrespective of whether thought is at work in it, I find such a notion contradictory to the very notion of cognitive consciousness. For in such case thought is an otiose excrescence in a world which would still be the same without it. In such case cognitive consciousness must be an unaccountable by-product of the cosmic machinery. This sort of metaphysical realism strikes me as a violent attempt to get out of an *impasse* created by a confusion of the psychological and the logical treatments of cognition. It is, therefore, perhaps opportune to reiterate some truisms on this point.

Judgment is the fundamental *act* of thought, and a right notion of the nature and function of judgment is indispensable to an adequate conception of the logical function and ultimate position of thought with reference to reality. I, therefore, propose to start from the definition of judgment as the reference of an idea to reality, or the 'intellectual function which defines reality by significant ideas,'¹ and to show that the assumption of a reality entirely independent of thought has its roots in a fallacious conception of thought.

In the definition of judgment as the reference of an idea to reality, 'idea' is used not in the psychological sense of a mere mental existent, but as *meaning*. We must be on our guard against confusing these two uses of 'idea.' Even Mr. Bradley seems to drop back into the psychological mode of treatment when he says, "A meaning consists of a part of the content (original or acquired) cut off, fixed by the mind and considered apart from the existence of the sign."² To speak thus as if reasoning and judgment were static, psychologically given contents, is to obscure the true bearings of a conception of judgment that is in itself entirely adequate. I prefer to say simply that it is the 'meaning' of an idea that refers to reality and that meaning is dynamic, a matter of active tendency and direction. In cognitive thinking judgment is the *act* of cognitive reference to reality, and hence not to be regarded as in any sense a psychological

¹ Bosanquet, 'Logic,' Vol. I., p. 104.

² 'Principles of Logic,' p. 4.

content. Let us consider for a moment the distinction between the psychological and the logical points of view.

It is necessary for the descriptive analysis of psychology that conscious process be regarded as having separate and independent existence sundered from the world of social and physical existence. This sundering of consciousness from its world-context is absolutely indispensable to the work of exact analysis. Analytic psychology treats the individual consciousness as if it flowed on independent of anything else. This artificial isolation is applied alike to the mental processes which have cognitive, esthetic or ethical reference. Now if the logician or epistemologist sets out from this standpoint of psychological abstraction he will never find a clear or straight road back to the real world with which consciousness as cognitive deals. The reference of thought to reality in the act of judgment is at some point an *immediate reference* or it is no reference at all. Thought for logic is primarily and fundamentally thought-referring-to-an-existent-order, not thought as idea simply entertained in somebody's head. Nothing but confusion can result if the logical and epistemological consideration of thought set out by sundering, in the fashion of psychological analysis, thought from its object of reference. It is this initial error in the treatment of judgment that makes plausible the recent 'realisms' which maintain that thought makes no sort of difference to the existence and reality of outer things, and that even the abstract propositions of mathematics must be entities existing independently of any knowing mind. Truly, if judgment be primarily a conscious process having mere psychical existence in individual heads, if cognition consists in the entertaining of ideas by a consciousness sundered from the universe of things, then thought is but the passive reflector of a world of entirely independent entities. In this case thought may in some mysterious fashion represent things, but it does nothing. It makes no difference to reality. There is, then, no way of bridging the chasm from the thought-side to the real world outside, and our so-called universal truths—those of logic and pure mathematics—either are mere individual psychic existents like any other content of consciousness or they have a mysterious existence as independent entities. (Analogous problems arise in regard to the concepts of ethics and esthetics when these two are treated in psychological fashion as mere contents of consciousness. Duty, goodness and beauty are then either purely subjective or they are independent entities.)

I should be the last to deny that we may derive aid in the development of a logical theory of cognition from psychological analysis. But we shall surely be led astray unless we bear in mind that thought in its actual functioning as instrument of cognition is

an act of immediate and indivisible reference to reality. And, on the other hand, if we keep in mind that judgment as the immediate reference of a meaning to reality is the act of a moving or fluid mind in relation to an environment only relatively stable. We shall be able to understand why logical thinking, too, undergoes an evolution, and we need not be greatly troubled by the problem of erroneous judgment. An erroneous judgment is a reference to reality, erroneous either because the mind in making this reference has not taken sufficiently into account the systematic context of its immediate meaning or because meanwhile the real context has shifted in some respect. The failure of the immediate meaning can only be discovered by an actual reference of it to reality; and the test consists in trying to fit the particular judgment into a more or less connected system of judgments that have proved themselves workable and consistent.

The objection to the above conception of judgment from the existence of such judgments, as a 'centaur has the lower body of a horse and the head and shoulders of a man,' rests on a confusion. The above proposition is a judgment with reference to a mythological universe 'of discourse,' which again is related to the real world through the implied assertion of the real existence of men and horses. All false ideas and erroneous judgments have psychological existence, and the assertion of their existence is a true judgment since it refers to reality in which every individual mind has a place. Again, the judgment, 'there is truth,' is the assertion that what is meant or signified by 'truth' is involved in the world of fact or reality. (I should say that the judgment, 'truth exists,' is badly put, and that it is better to differentiate truth's actuality from the actuality of other things by saying 'truth is valid' or 'knowledge *means* or *signifies* reality.') A serious difficulty seems to arise from the case of mathematical and logical judgments. It may be said that the judgment $2 + 2 = 4$ is true even if two things do not and have not anywhere existed and the truth of such judgments can not be constituted by any one's thinking them. For if they were made true by being thought, they might be false, since thought is as likely to be false as true. The latter objection rests again on the confusion of judgment as a cognitive and over-individual act of reference to reality and propositions as mere psychological existents. To judge that $2 + 2 = 4$ is to mean that the real world is so constituted that whenever a rational mind performs the operation of adding two things to two things the result will be four, and the assertion that this judgment is true whether there are really in the world any minds to think four things derives its specious force from failure to observe that the bare symbols mean and refer to actual operations of thought in

counting. Merely to think of two things is at least to assert the universal operation of thought meant by the figure 2. Without this minimum of reference the statement $2 + 2 = 4$ is meaningless. Either the truths of mathematics and logic are principles of actual thinking or they are material entities. The latter supposition is meaningless. The former means that the principles of logic and pure mathematics are expressive of universal conditions of valid thinking in normal minds. If one's thought is to be normal and have a place in that consistent or systematic whole by which alone thought can validly mean reality, one must follow the condition of this common or over-individual thought-structure.

The reality of abstract truths, then, is a thought-reality, but not a mere psychological existence. Like all actual judgments, the judgments of mathematics are logical acts which transcend psychological existence and take their places in an organic and self-consistent system, which latter is the determining ideal that is, at least in part, actualized in the body of science. And the simplest hypothesis on which to ground the validity of this ideal system and by which to account for the common or over-individual thought-structure involved in all judgment will perhaps, after all, prove to be that of a general thinking consciousness. I do not advance this doctrine as the inevitable outcome of reflection on the basis of judgment, but simply to insist that it is a theory seriously to be reckoned with.

J. A. LEIGHTON.

HOBART COLLEGE.

SOCIETIES

SECTION OF ANTHROPOLOGY AND PSYCHOLOGY OF THE NEW YORK ACADEMY OF SCIENCES

REPORT OF THE SECRETARY

AT a meeting held in conjunction with the New York Section of the American Psychological Association, on the afternoon and evening of November 27, 1905, with Professor Woodbridge in the chair, Professor Robert MacDougall was elected Chairman for the coming year and Professor R. S. Woodworth Secretary. The following are abstracts of the papers read:

Smell Discrimination of Two Hundred and Fifty-five Students:
WILL S. MONROE.

Students were provided with sets of small phials filled one third full of common odors,—chiefly essential oils. Each set contained

20 odors. Nostrils were alternately used; five seconds were given for the stimulation, and one minute was allowed for recording the result and resting the nostrils. After every seven tests, the windows were opened and the room aired. In all, 255 students were tested. The average number of odors correctly named was 6.72. Four students named 12 correctly; two students, 11; and 5 students, 10. Two of the students were able to identify but 1 odor each; 15 students, but 2 odors each; and 17 students, but 3 odors each.

Wintergreen was correctly identified by 77 per cent. of the students; camphor, 75 per cent.; peppermint, 75 per cent.; vanilla, 74 per cent.; cloves, 65 per cent.; cinnamon, 56 per cent.; spearmint, 38 per cent.; turpentine, 36 per cent.; tar, 36 per cent.; lemon, 30 per cent.; nutmeg, 27 per cent.; anise, 26 per cent.; pennyroyal, 21 per cent.; sassafras, 15 per cent.; bay rum, 9 per cent.; hemlock, 4 per cent.; bergamot, 3 per cent.; asafoetida, 2 per cent.; wormwood, 1 per cent.; and lavender, half of one per cent. A census of color names showed that the students believed themselves familiar with certain odors, such as lavender, which they were unable to recognize.

Linguistic Standards: **FREDERIC LYMAN WELLS.**

A historical standard is necessary for the regulation of linguistic usage, but the present literary interpretation of it is open to many objections, being reactionary in character and inconsistent in its admissions and exclusions. Models of linguistic excellence, as determinative of that body of elements to be considered good use, are to be sought among works whose criteria of value are more objective in character than is the case at present, as their value can be more rapidly and more accurately determined, and they are in closer touch with the actual needs of the language. The introspection of the author of the average 'Principles of Rhetoric' should not be accepted as final in determining the interrelationship of these elements of good use. It is possible to determine linguistic values of all sorts by statistical methods, which give not only the most valid determination possible, but also the measure of this validity. Determinations of so apparently subjective a character as linguistic force can be made with a validity that approximates practical certainty. These experimental determinations do not coincide with any of the definitions of force which the introspective grammarians have laid down.

Preliminary Report on 'A Threshold Study of the Reading Pause':
F. M. HAMILTON.

Previous investigators of the problem of reading have agreed

upon the short exposure method as best for psychological analysis. Introspection is facilitated most when the exposure is less than the shortest reading pause, *i. e.*, when all eye movements are excluded. The apparatus most generally used is the tachistoscope of the fall screen variety. The word has been uniformly treated as the unit of perception in reading, the effort being to determine the factors or 'cues' of word recognition—their character and order of occurrence.

Previous tachistoscopic studies have confined themselves chiefly to the reading of isolated words; the present study has attempted to adapt the method to reading in context.

A second adaptation is its use in analyzing processes at the threshold of word recognition by reducing the exposure time to a period approximating the time differences of the perceptibility of their attributes, the presupposition being that various attributes of objects lie at varying distances from the threshold.

And still a third untried possibility of this method consists in reports upon the marginal field of perceptual regard in addition to the reports upon the field of distinct vision.

The experiments have already proceeded far enough to give assurance that the completion of the study will shed additional light upon the questions of literal reading, reading cues, value of context, etc.

Vision and Localization During Rapid Eye Movements: R. S. WOODWORTH.

An attempt was made to throw some additional light on the question first raised by Cattell¹ as to what is seen during movements or jumps of the eye from one fixation point to another. Two opposing views are those of Holt,² who holds to a complete anesthesia or inhibition of the visual center during the movement, and of Dodge,³ who believes that vision there is possible but under ordinary conditions not actualized, because the faint blur produced by moving the eye across a variegated field is so brief and meaningless as to be ignored, just as entoptic phenomena are ignored. Proceeding on the supposition that if the latter view were correct it should be possible by attention and practice to become conscious of the stimuli that affect the eye during movement, the author has convinced himself of the following facts:

¹ *Psychological Review*, 1900, VII., pp. 325-343, 507-508.

² *Ibid.*; *Monograph Supplements*, 1903, IV., pp. 3-45; *Psychological Bulletin*, 1905, II.

³ *Psychological Review*, 1900, VII., pp. 454-465; *Psychological Bulletin*, 1905, II., pp. 193-199.

1. During head movements, an object held in the mouth may remain in clear vision.

2. During convergence, the two monocular fields may be seen to move across each other.

3. During eye-jumps proper, after-images may remain in consciousness if the lids are closed (Exner), or if the background is dark or plain; it is also possible, in short jumps, or at the beginning and end of longer ones, to see entoptic spots move across the background.

4. External objects moving in the same direction as the eye are distinctly seen when their angular velocity with respect to the eye coincides with that of the eye at any part of its jump (Cattell, Dodge). With reference to Holt's objection that what is seen may be the positive after-image, appearing after the eye has come to rest, it should be noted that the objects so brought to clear vision are correctly localized in space, instead of being projected against the background at the new point of fixation, as would be the case with after-images. Thus not only vision, but correct localization of objects seen, is possible during eye-jumps.

5. Stationary objects over which the eye passes can also be seen after practice. Fusion, flicker, and especially apparent motion of the objects, corresponding to the actual motion of their images across the retina, can all be seen. A peculiarity which calls for further discussion is that the apparent extent of the object's motion is much less than the actual motion of the eye as measured against the background.

The author's conclusion is that vision with the moving eye is essentially the same as that with the fixed eye when the external field moves.

The Measurement of Scientific Merit: J. McKEEN CATTELL.

The speaker explained how he had selected a group of one thousand scientific men for the study of individual differences and the conditions on which success in scientific work depends. In each of the twelve principal sciences the students who had done original work were arranged in the order of merit of their work by ten competent judges. Thus was obtained the order of merit and also the probable error of each position, it being based on ten independent observations. This probable error is inversely as the differences in scientific method, it being small where the differences are marked and becoming larger as the differences are less. It is thus possible to construct a curve representing the distribution of scientific merit in these thousand scientific men, and this curve agrees rather closely with the positive half of the curve of error. The first hundred men

differ among themselves about as much as the next two hundred or the last seven hundred.

Data were also given in regard to the distribution of the thousand leading scientific men of the country. The birth-rate of these scientific men was 27 per million of the population, it being 50 in cities and 24 in the country. It was 109 in Massachusetts, 47 in New York, 23 in Pennsylvania, 12 in Missouri and 1 in Mississippi and in Louisiana. Their present distribution is somewhat similar. Thus 134 scientific men were born in Massachusetts and 144 reside there; 183 were born in New York and 192 reside there. The central states, with the exception of Illinois, tend to lose their scientific men. Thus 75 were born in Ohio, and 34 now reside there. The distribution of these scientific men among different institutions is as follows: Harvard, 66; Columbia, 60; Chicago, 39; Cornell, 33; U. S. Geological Survey, 32; U. S. Department of Agriculture, 32; Johns Hopkins, 30; California, 27; Yale, 26; Smithsonian Institution, 22; Michigan, 20; Massachusetts Institute of Technology, 19; Wisconsin, 18; Pennsylvania, 17; Stanford, 16; Princeton, 14; Minnesota and Ohio State, 10 each.

Temperament as Affecting Philosophic Thought: BROTHER CHRYSOSTOM.

It is impossible either to understand the great philosophers or to appreciate their influence if we limit ourselves to a purely scientific standpoint. Temperament enters so largely as a factor both in determining the principles on which they lay special stress and in gaining disciples for their respective schools, that we are forced to consider them also from a literary view-point if we would do them justice. The ingredients that form temperament may be arranged under the following heads: (1) Heredity, which is especially helpful in tracing tendencies favoring the pursuit of the concrete; (2) environment, which is closely interwoven with heredity and may be called a condition of its development as a factor in mental life; (3) race and nationality. No Frenchman will treat a subject in the same manner as a German; (4) the attraction exercised by the first philosopher who interests a thinker; (5) the time or epoch in which the philosopher lived; for history is governed to a great extent by the law of reaction and adjustment, which results in the formation of cycles of thought; (6) the personality of the founder. This leads him to lay emphasis upon certain phases of truth to the neglect of others. To estimate his influence we must attend to the elements of truth contained in his system of thought.

Are Mental Processes in Space? W. P. MONTAGUE.

The speaker protested first against the current paradoxical view of mental processes as real occurrences that occur nowhere. They should be located in space for the following reasons: (1) They are naturally felt to be within the body; (2) they form no exception to the generally accepted rule that an invisible event, such as an electric current, is to be located in the visible object that directly conditions it; (3) their phenomenal existence in space (like their existence in time) is not in conflict with the transcendental view that space and time are appearances; (4) that they are neither punctiform nor figured is no argument against their location in space, for many things—notably, sounds and odors—are definitely located in space without being regarded as either punctiform or figured; (5) the objection that there is no room in space for anything but matter and motion, and that thoughts and feelings if they were really in the brain would have to be regarded as visible substances between or alongside of the brain molecules, is invalid, for it disregards the fact that sensations are intensive and not extensive, and that they must, therefore, occupy space in the same way as other intensities, such as stresses, velocities and accelerations, which exist in space *along with* their matter and not *alongside* of it.

The last part of the paper explained and defended the hypothesis that mental states are the modes of potential energy (expressible in terms of the higher derivatives of space with regard to time) into which the kinetic energy of the nerve currents must be transformed in order to be redirected. The theory, if true, would justify the belief in interaction without violating the parallelists' contention that the spatial can only be causally related to what is in space.

R. S. WOODWORTH,
Secretary.

REVIEWS AND ABSTRACTS OF LITERATURE

Das Farbenempfindungssystem der Hellenen. W. SCHULTZ. Leipzig: J. A. Barth. 1904. Pp. 227; 3 colored tables.

This book returns to the old subject, discussed several decades ago by Gladstone, Geiger, Magnus and their opponents, of the color sense of the Greeks as revealed in their use of color names. The author, primarily a philologist, has informed himself regarding the psychology of color, and stands in this respect on a distinctly higher level than his predecessors. His studies lead him also to quite a different conclusion from the famous one of Geiger and Magnus, for whereas the older authors hold that the Greeks, at the dawn of their history, sensed red and yellow only, and only slowly developed a sense for green and blue, Schultz rejects the notion of such a development, since he finds the same looseness of color naming to

obtain from the earliest writers to the latest. He reaches, however, the scarcely less startling conclusion that the Greeks were as a race color-blind, and yellow-blue blind at that.

The author seeks first of all to establish general criteria for inferring sensory defects from looseness of nomenclature. Where a color name is primarily the name of an object which itself presents different colors—such as the apple—an apparent confusion in the use of the name is no proof of true sensory confusion. Moreover, it is necessary to distinguish between the range of application of the name (its 'Spielbereich'), and a genuine manifoldness of usage ('Vieldeutigkeit'). To include under one name colors that shade into each other, such as green and blue, is no proof of sensory confusion; but to include discontinuous colors is proof. [Even this refined criterion is not above criticism, since, as Myers¹ has shown for present-day Scots, as well as for various primitive peoples, and Chamberlain² for North American Indians, the same word may be applied to discontinuous tastes, sour and bitter, or salt and bitter, though it is very unlikely that these races lack any of the four primary taste sensations. A continuity may indeed be felt between sour and bitter, or between salt and bitter, but it is of an emotional rather than of a purely sensory character. It is a mistake to suppose that people who have not made a psychological analysis of sensations should use sense names to denote *purely sensory* qualities, or that the continuity which they feel between their different applications of the same name should necessarily be a purely sensory continuity.]

The author proceeds (pp. 16–82) to examine the usage of 51 color names. In distinction from his predecessors, he lays comparatively little stress on citations from the poets, believing that prose writers, and especially scientific writers, furnish the more exact and literal sense. He makes use especially of Aristotle and his commentators, of Plato, Theophrastus, Democritus, Galen and the lexicographers. Of the 51 color names, 19 showed two or more discontinuous meanings, and of these 8 are strictly abstract names, not naming the color by reference to any object; they include the common names for red, yellow, green, blue and violet. From these linguistic facts, the author believes it possible (p. 94) to infer that the Greek color sense was deficient in comparison with what we know as the normal. Incidentally he asserts that no similar conclusion can be drawn from the Latin.

Although the linguistic material shows the color sense of the Greeks to have been abnormal, it does not, alone, permit an exact diagnosis of the abnormality. The author, therefore, turns to other sources of information. The descriptions of the rainbow by Xenophanes, Anaximenes, Aristotle, Metrodorus and Posidonius are utilized; most of these do not give a detailed description, but Aristotle and Posidonius seem to aim at completeness. Aristotle's description is correct, but that of Posidonius

¹ 'The Taste-Names of Primitive Peoples,' *British Journal of Psychology*, Vol. I., p. 117.

² 'Primitive Taste Words,' *American Journal of Psychology*, Vol. XIV., n. 410.

appears to err in the order of the colors, by interchanging green and violet. Aristotle's account of after-images is also considered, and his curious statement is pointed out that the after-image has the same color as the original light, for which Aristotle gives the examples of white and green lights. Next, the author turns to the detailed accounts of simple and mixed colors given by Plato and Democritus. It is argued that Democritus would be likely to base his statements on experiment, but when the Democritean components for a given color are mixed, the result is often quite different from that color. It would appear that Democritus was color-blind; and the same would apply to Plato but for the doubt whether Plato would experiment. A colored table shows the striking discrepancies between the Democritean results of color mixture and the normal results.

A start is also made towards an archeological study of the Greek color sense as revealed in their paintings. Only one example was available, and that in a lithographed reproduction, of which a copy is inserted—a fresco unearthed at Eleusis, representing Zeus wearing a violet robe, on which, however, there are green streaks, and resting his feet on a wooden stool, the top of which is, however, green. The author concludes (p. 149) that the painter, and also those who accepted the painting and who enjoyed it, were unable to distinguish green from violet and from wood-color. As regards all but the painter himself, however, it should be noted (p. 192) that our author showed the picture to about 100 persons, only one of whom spontaneously noticed anything wrong in the coloring.

After a chapter devoted to the description of different types of color-blindness, the author proceeds to a diagnosis of the Greek color-sense. He decides that the most striking confusion is between greens and violets, as seen in the painting of Zeus, in Posidonius's description of the rainbow, in one of Democritus's false mixtures, and in the interchangeable use of words for green and violet. As these are confusion colors in blue-yellow blindness, he diagnoses the Greek anomaly in that way; and finds his diagnosis confirmed by the lack of definite, unequivocal terms for yellow and blue in the language (for *χρᾶν* he decides to have meant a luminous black, with which blue was confounded; *ξανθόν* meant orange rather than yellow, while *ὀχρῶν* covered the whole range from red through yellow to green). In an appendix, he seeks to meet objections raised on the score of probability by pointing out that every people is in part color-blind, i. e., contains color-blind individuals and strains; the Greeks may have had so large a proportion of the color-blind as to determine the language of color.

If, however, the author's argumentation is critically examined, it falls of its own weight. It proves too much. Rather arbitrarily, in making his diagnosis, he has emphasized one class of confusions (green-violet), to the neglect of others which he had established fully as well. This will be seen from the list of color names on which he bases his linguistic proof of abnormality, with their proper and anomalous uses:

ἐρυθρόν, properly red; also green.

ξανθόν, properly orange, yellow, or brown; also green.

ὀχρῶν, red, orange, yellow, green.

χλωρόν, properly *yellowish green*; also *green, brown*.

χαροπόν, properly *light blue, green*; also *red*.

κυανοῦν, *blue and black*.

άλουργές, properly *violet*; also *green*.

γλαυχόν, *red, orange, green, blue*.

From this list it will be seen that green is not confused with violet only, but often with red, and also with orange, yellow and blue,—in fact, with every color of the spectrum. Red is confused with orange, yellow, green and blue; yellow with red, orange, green and blue; and blue with red, orange, green and black. All in all, it would seem that no two colors were clearly distinguished, and the proper diagnosis would be *total color-blindness*. About the same thing can be said of the color mixtures of Democritus: some are correct, some show yellow-blue blindness, but others red-green blindness. Probably the correct diagnosis in his case is that he was not experimenting after all, but speculating, as Aristotle was when he derived all the colors from a mixture of black and white. Aristotle's after-image statement would seem to show that the negative after-image of any color—since white and green are simply examples—appeared to him like the original; therefore he was unable to distinguish any color from its complementary, and was totally color-blind. Even the painter of the Eleusinian Zeus confused green not only with violet (yellow-blue blindness), but also with the brown of wood (red-green blindness). For a people who developed a large color vocabulary, and used it in the main with little evident confusion, the diagnosis of total color-blindness would be a *reductio ad absurdum* of the argument; yet that was what the author's evidence led him to, if taken in all seriousness, rather than to his comparatively weak-kneed diagnosis of yellow-blue blindness.

Evidence which, taken at its face value, leads to an absurd conclusion must be worth less than at first appears. In fact, a rereading of the author's work shows a possible escape from nearly every piece of evidence presented. If Democritus did not base his statements on experiment; if Posidonius, in asserting the rainbow to contain 'first, red; second, purple and violet; third, blue and green,' was thinking of some other than the spatial order of the colors; if the *lining* of Zeus's robe, in the Eleusinian painting, was intended to be green—then nearly all but the linguistic evidence would disappear. The confusions in color names are scarcely better established. Thus ἐρυθρόν is used so consistently to mean red as to leave our author no doubt of its proper application; but he finds Theophrastus, in speaking of a group of red flowers, describing one as ἐγγλωρότερον, 'more tinged with green,' than another; still, a red corolla may have green streaks on it. ξανθόν had apparently a wide range of application, running from red to greenish yellow; the author asserts, however, without of course being able to present his evidence for this universal negative, that it never meant pure yellow; so that as orange and as yellowish green it would have discontinuous applications. Practically the same applies to ὠχρόν; it should be said that the equation ξανθόν = ὠχρόν = χλωρόν seems to be founded only on the late lexicographer Hesychius. χλωρόν clearly meant a yellowish green; difficulty arises

from its occasional application to such things as blood, roses and the nightingale, but the other meaning 'fresh' may perhaps explain these cases. For *χαροπόν* the different meanings are only very indirectly established. *άλουργές* usually meant violet, and the meaning green is only got from Posidonius's description of the rainbow, discussed above. Our old friend *γλαυκόν* is shamefully treated; first it is denied its traditional meaning of bright or light (as in *γλαυκῶπις Ἀθήνη*), and compelled to do duty as a color name; then it is caught referring to objects of several different colors, and so overwhelmed with confusion. On the whole, there are very few of the instances quoted for which a plausible explanation does not readily occur to mind. And there is one general consideration that should be borne in mind: here and there an author may indeed have been color-blind. Out of 70 authors cited, probably some two or three were red-green blind, provided this defect were as prevalent among the Greeks as among modern Europeans. But as for showing that the Greeks as a race were defective in the color sense, the evidence adduced amounts to practically nothing. The close relation between *κυανῶν* (blue) and black is, indeed, curious, but it is of common occurrence in the speech of other peoples, who, on being tested, are found not to be yellow-blue blind, nor specially defective in the perception of blue.

R. S. WOODWORTH.

COLUMBIA UNIVERSITY.

Ueber die Erzeugung physikalischer Kombinationstöne mittels des Stentortelephons. KARL L. SCHAEFER. *Annalen der Physik*, Bd. 17, 1905. Pp. 572-583.

This paper is of interest to psychologists by reason of certain technical suggestions. Schaefer finds that various pairs of tuning-forks sounding in front of a Stentormikrophon are reproduced with great distinctness in a telephone that may be in a distant room, and that the first and sometimes the second difference-tone are actually emitted from the transmitter, and so strongly as to excite resonators or even tuning-forks of the corresponding vibration rates. An objective summation-tone coming from the telephone was also in several cases demonstrated. It seems certain that these difference- and summation-tones are produced by the telephone diaphragm and not by the microphone, and Schaefer suggests that, in spite of numerous adverse criticisms, Helmholtz may have been right in supposing that 'subjective' difference-tones and combination-tones originate in the ear-drum, which is in many respects similar to the diaphragm of a telephone.

E. B. HOLT.

HARVARD UNIVERSITY.

Eine virtuelle stereoskopische Täuschung. PAUL CZERMAK. *Zeitschrift für den physikalischen und chemischen Unterricht*, XVII., Jahrgang. S. 341.

After briefly reviewing the optical illusions described by Roget, Platteau, Faraday and Emsmann, the author described a new illusion that

depends on the same principles as the illusions of Plateau and Faraday; and that is specially adapted to demonstration before large classes. Two polished rods are fixed vertically on a disk that rotates in a horizontal plane, and at different distances from the center of the disk. The rotation produces (by virtue of after-images) the appearance of two concentric, shimmering cylinders, of which the smaller is generated by the rod that is nearer the center of rotation. Within this inner cylinder there appear two dark vertical rods that seem to be at rest as long as the rate of rotation is kept constant, but to move if the rate is varied. The width of the two rods is not the same. Their appearance is due only to the persistence of after-images and the momentary concealment of one rod by the other as the disk rotates; their apparent position within the inner cylinder is a true stereoscopic phenomenon. The appearance of the rods rests on precisely the same principles as those of what has sometimes been called the Münsterberg-Jastrow illusion; and like this latter, Czermak's illusion can be photographed. The author describes mathematically the position and number of the rods seen, together with several interesting complications that may be introduced by the use of several rods, etc.

E. B. HOLT.

HARVARD UNIVERSITY.

JOURNALS AND NEW BOOKS

REVUE PHILOSOPHIQUE. November, 1905. *Les lois de la solidarité morale* (pp. 441-471): G. RICHARD. - Solidarity is implied in the concept of moral value. The moral life is a collective effort to save society from dissolution. In this effort society exaggerates its own type and so makes individuals in so far automatic, with the result that when new conditions arise criminality develops. Criminality is the result of weakened automatic sociality. *Les abstraits émotionnelles* (pp. 472-485): L. DUGAS. - Feelings are not generalized by 'fusion.' Two types are distinguished: emotional abstractions, which are generalizations resulting from the grouping of various objects around a feeling-quality; and abstract emotions, which are names for the laws binding together experiences. As interest directs our acts, so the framework of these act-series is an abstract feeling. The abstraction of feelings explains that of 'ideas.' *La moralité de l'art* (pp. 486-510): P. GAULTIER. - Art is neither moral nor immoral, but amoral. It is not limited to the representation of ethical objects, but only to that of enjoyable ones. In such objects sensuous enjoyment appears, but only as one of many types. The esthetic and the ethical attitudes show structural similarities in that each subordinates desires to an end. This may account for the uplifting, quasi-moral effect of art. Yet art has no moral mission. *Revue générale: Le matérialisme historique et son évolution*: C. G. PICAUVET. - A criticism of the works of Marx and Engels. The development of Marxism under Engels was away from dogmatism. Engels recognized finally the weaknesses in the materialistic view of history, and modern Marxists throw off the Hegelian scheme

entirely, regarding the economic view as simply a 'canon of historical interpretation.' *Analysis et comptes rendus*: Gustave le Bon, *L'évolution de la matière*: JULES SAGERET. Paul Sollier, *Le mécanisme des émotions*: JANKELEVITCH. J. Grasset, *Les centres nerveux*: JANKELEVITCH. Ossip-Lourié, *La psychologie des romanciers russes du XIX. siècle*: L. ARRÉAT. A. Michotte, *Les signes régionaux*: B. BOURDON. Wallin, *Optical Illusions*: B. B. *Révue des périodiques étrangers*.

Del Vecchio, Giorgio. *I presupposti filosofici della nozione del diritto*. Bologna: Zanichelli. 1905.

Guastella, Cosmo. *Saggi sulla teoria della conoscenza*. Palermo: Sandron. 1905.

Raich, Maira. *Fichte seine Ethik und seine Stellung zum Problem des Individualismus*. Tübingen: Mohr. 1905. 4 M.

Schmid, Bastian. *Philosophisches Lesebuch*. Leipzig: B. G. Teubner. 1905. 3.40 M.

NOTES AND NEWS

DR. WENDELL T. BUSH, lecturer in philosophy at Columbia University, has been associated in the editorial management of this JOURNAL. Communications may be addressed to him at the office of the JOURNAL, Sub-Station 84, New York City.

IN accordance with announcements already made, the American Philosophical Association and the American Psychological Association met on invitation of the department of philosophy of Harvard University, in Cambridge, December 27-29, 1905. Addresses were made by the retiring presidents, Professor Dewey addressing the Philosophical Association on 'Beliefs and Realities,' and Professor Calkins the Psychological Association on 'A Reconciliation of Structural and Functional Psychology.' The meetings were well attended, and the discussions particularly active and interesting. Members of both associations enjoyed a most generous hospitality extended to them by the members of the department of philosophy of Harvard University and by the Harvard Corporation. Officers for the ensuing year were elected as follows: For the Philosophical Association—President, Professor William James, of Harvard University; Vice-president, Ernst Albee, of Cornell University; Secretary-treasurer, Professor J. G. Hibben, of Princeton University; new members of the Executive Committee, Professor A. K. Rogers, of Butler College, and Professor Frank Thilly, of Princeton University. For the Psychological Association—President, Professor J. R. Angell, of the University of Chicago; Secretary-treasurer, Mr. W. H. Davis, of Lehigh University; new members of the Council, Professor Mary W. Calkins, of Wellesley College, and Professor C. E. Seashore, of the University of Iowa. A detailed report of the meetings may be expected in subsequent numbers of this JOURNAL.

IN the *Astrophysical Journal* for October Mr. F. R. Moulton, of the University of Chicago, brings forward a new theory to account for the evolution of the solar system. Mr. Moulton and Professor T. C. Chamberlin have studied the theory of Laplace from the dynamical standpoint, and the many contradictions which they have found lead them to reject it. In the new theory a spiral nebula is assumed, containing primitive nuclei about which the planets and their satellites subsequently formed. We may account for the original spiral nebula by assuming a star to approach the sun, producing tides in the sun's matter, and the continuation of these tides might cause large masses to be ejected and drawn into a spiral. A work soon to be published promises a fuller statement of the hypothesis.

IN a review in *Nature* of Duhem's 'Les Origines de la Statique' occur the following suggestive comments: "The main result—and this is established beyond all reasonable doubt—is that the mechanics of the fifteenth and sixteenth centuries must not be regarded as a sudden achievement but as a development of ideas current in the thirteenth and fourteenth centuries, many of which were unscrupulously reproduced without acknowledgment. . . . And although this conclusion may somewhat dim our mental picture of the Renaissance, it will deepen our piety towards those *obscuri viri* who cultivated science and learning when they were most in danger of extinction."

THE Philosophical Society of the Ohio State University announces the following calendar for the winter of 1905-06: Tuesday, October 17, president's address; Tuesday, November 14, 'The Value for Consciousness of Bodily Reactions,' Burtis Burr Breese; Tuesday, January 9, 'The Non-Euclidean Contribution to Philosophy,' George Bruce Halstead; Tuesday, February 13, 'The Conservation of Energy,' William Henry Scott; Tuesday, March 13, 'Recent Studies in Heredity,' Edward Loranus Rice; Tuesday, April 10, 'Religion in Education,' William Oxley Thompson. The officers of the society are A. E. Davies, president; D. R. Major, vice-president; F. L. Landacre, secretary; J. E. Hagerty, treasurer.

AT the last meeting of the Board of Regents of the University of Michigan President Angell reported the receipt of a gift of \$450 for the University from Mrs. George S. Morris, of Ann Arbor. Of this amount \$350 is to establish a fellowship in philosophy bearing the name of the late George S. Morris. Professor Morris was a member of the department of philosophy in the University from 1881 until his death in 1889, and professor of modern languages and literature nearly all of the preceding decade.

MR. JAMES CARLETON BELL, Ph.D. (Harvard), for one year a student in the Leipzig psychology laboratory, has been appointed instructor in experimental psychology at Wellesley College. With Dr. Gamble, associate professor in psychology, Dr. Bell directs the research work and superintends the second year training course in laboratory psychology.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

THE NATURE OF FEELING¹

I

SEC. 1. Dr. James Ward in his *Encyclopedia Britannica* article has called attention to four distinctly different meanings given to the term 'feeling,' it being employed as the equivalent of touch, of the organic sensations, of the emotions and of pleasure-pain. To this list I would add the use of the word to express what Ward would call mere presentation itself, i. e., mere cases of psychic emphasis according to my terminology, cases of mere emphatic experience as such, which for the sake of brevity I shall usually speak of in what follows as mere experience. It is thus, for instance, that Professor James uses the word in his 'Psychology' where,² in searching for 'some general term by which to designate all states of consciousness merely as such,' he states his partiality for either 'feeling or thought'; and where again³ he speaks of 'feelings of relation,' and tells us 'we ought to say a feeling of *and*, a feeling of *if*, . . . quite as readily as we say a feeling of *blue* or a feeling of *cold*.'

The fact that this word 'feeling' is thus employed would in itself make our problem sufficiently troublesome, but an indefinite confusion is added when we find writers using the term in different senses at different times, and without adequate warning to the student.

I have just quoted Professor James's usage of 'feeling' in his 'Psychology' as the equivalent of mere emphatic experience as such; but surely this is not what he means by 'feeling' in his 'Varieties of Religious Experience,'⁴ where he tells us that 'in religion feeling is deeper than intellect.'

¹ Paper read before the American Psychological Association at its fourteenth annual meeting, at Cambridge, December, 1905.

² Vol. I., pp. 185 and 186.

³ *Ibid.*, pp. 245 and 246.

⁴ Chapter XVIII., and Index reference.

Nor does Professor James stand alone in this rather reckless use of the term; a large proportion of our best psychologists must also plead guilty to the same indictment. To take a late instance: in the thirteenth chapter of his excellent 'Psychology,' Professor Angell uses the word feeling, as he says (p. 257), 'to designate in a general way those processes which represent and express the tone of our consciousness.' He does not give us any specific definition of the word tone, but he leaves us in no doubt by the context that he means by it the pleasure-pain aspect of our presentations. Yet he at once adopts the word affection as a synonym of feeling, and the word affection certainly has an emotional twang. Beyond this, while he happily separates his treatment of feeling as pleasure-pain as widely as possible from his treatment of the emotions, nevertheless we find in these later pages many expressions which seem to indicate that emotion and feeling are identifiable: as, for instance (p. 327), 'the peculiar feeling which marks each emotion off from other emotions is primarily due to the different reactions which various objects call forth'; (p. 337) 'when we speak of sympathy we sometimes mean to indicate a definite feeling which has many characteristics of emotion,' 'the moral feeling of obligation or the feeling of conscience affords a further instance of our emotional psychoses.' In this last case it may be that feeling is used as the equivalent of mere experience, as it appears to be where he speaks in this connection of 'the feeling of dependence' and of 'feelings of reverence and of faith.'

Our psychological masters having thus set the example, it is natural to find the writers of the rising generation following them with even less care to restrict the meaning of the word. In late numbers of one of our psychological journals we find a serious article concerning feeling, in the body of which we find feeling identified with affection, emotion,⁵ and passion;⁶ again, with pleasure and pain;⁷ and again, with mere experience, in such expressions as 'I feel a conscious restraint,'⁸ 'my anticipatory feelings,'⁹ etc.

It seems to me that this is a favorable opportunity to enter my vigorous protest against this nefarious practice on the part of my fellow psychologists, and as I am calling attention to a real difficulty I may perhaps be allowed to suggest a means of avoiding it which I find effective. It is simply this: when I mean emotion or passion and nothing else, I use the words emotion or passion, and not the

⁵ This JOURNAL, Vol. II., p. 618.

⁶ *Op. cit.*, 646.

⁷ *Op. cit.*, 647.

⁸ *Op. cit.*, 647.

⁹ *Op. cit.*, 648.

word feeling; when I mean pleasure-pain I use the phrase pleasure-pain, and not feeling; when I mean mere experience, I use some other word or phrase than feeling. When one has followed this rule he is surprised to find how seldom he actually needs to employ the word feeling; when it is necessary to use it, then I find it to have a signification which I shall attempt to explain later on. To be sure such a procedure as I thus recommend deprives us psychologists of a word we are all fond of, and would result in the abandonment of many essays which in the preliminary writing would under such a rule appear to be inconsequent and inconsistent, but in the end I am convinced that our generous sacrifice would tend to true advance.

If I have hostile critics in this company I am going to insist that they follow this rule in their attacks upon me, and I am convinced that in so doing I shall be found to have spiked most of their guns.

Sec. 2. Let us now briefly consider the five usages above noted.

The common man may use feeling to refer to touch and to the organic sensations, but the psychologist at once finds himself avoiding this usage. We must agree that we shall be bound in the end to ask how it happens that the term is thus applied by the common man, but it is very evident that feeling itself is fuller and deeper than any special type of the sensations.

In like manner we are bound in the end to ask how it happens that we so often employ the term feeling when we mean to speak of mere experience; but I do not think that any special student of this subject will deny that there is a psychic somewhat which we may and do designate as feeling, which is not mere experience as such, but a very specific kind of experience, and it would thus appear that if we are to apply the word to this very specific type of experience we are not justified in employing it when we refer to experience in general.

Sec. 3. Turning now to the use of the word feeling to refer to the emotions and to pleasure-pain, it may be well to note that we can not allow ourselves to assume any form of total or partial identification of the emotions and pleasure-pain. The emotions, one and all, are psychic coincidents of instinctive reactions of the organism as such; they are a special type of what we may call instinct-experiences. But certainly neither pleasure nor pain as such is the psychic correspondent of a reaction of the whole organism upon its environment, as becomes apparent when we consider that very simple forms of impression upon us may give us keen sensational pleasure or pain. The most we can say is that our emotions are usually distinctly pleasant or painful; but even to this rule there are notable exceptions, as in the case of the usual forms of surprise, which is clearly

an emotion, yet is one that is usually classed as indifferent. It appears thus that in the analysis we are to make we must consider separately the application of the term feeling to the emotions and to pleasure-pain.

Sec. 4. That a large number of highly intelligent people habitually identify feeling with their emotional experiences is clear. The artist and critic of art for the most part use the word in this way; for them the man who 'feels things' is one who is keenly susceptible to nice changes of emotional reaction. But careful consideration surely serves to show that feeling is something quite different from emotion.

I think it will be generally agreed that what we mean by feeling is very closely related with pleasure-pain. But if, as we have just said, the emotions are not to be identified with, or are not developed from, pleasure-pain, with which feeling is thus closely related, then feeling must be in some sense broader than the emotions. Beyond this, the emotions are reactive experiences, and as such are only very indirectly influential in relation to the flow of thought; while feeling is appreciated as more than an immediate reactive experience, and as very directly influential in relation to the flow of thought. It is a well-recognized fact, for instance, that feeling greatly influences belief. But it can not be said that our emotions in themselves directly influence our beliefs; when they influence them at all they do so indirectly through the arousal of this feeling which is liable to appear in connection with some of them, but not with all of them. Love, fear and anger thus indirectly influence belief, but, so far as I can see, such emotions as surprise and *ennui*, for instance, do not.

So it would appear that what we mean by feeling is not emotion, although clearly emotion is liable to carry feeling with it, if we may so speak.

Sec. 5. When we turn to consider the identification of feeling with pleasure-pain, we meet with questions which require more careful study. Dr. James Ward speaks of pleasure and pain as 'feeling proper,' and as in this position he is in accord with a large number of eminent psychologists, one who ventures to express unqualified dissent from this view, as I am compelled to, can not do so without caution, nor without acknowledging at once that the fact that this notion is maintained by men of keen insight implies that we find in pleasure and pain a very clear exemplification of the special mental qualification of the state which we may properly designate as feeling; and this, as we shall presently show, turns out to be true.

If pleasure-pain is 'feeling proper,' then it would seem either (1) that all the special mental forms which we naturally speak of

as phases of feeling must be distinctly pleasant or painful; or must be summations of pleasures and pains; or else, (2) pleasure-pain is the simplest form of feeling, and in our complex life develops beyond this simple form into something radically different from pleasure-pain. Let us consider each of these hypotheses as briefly as may be.

Sec. 6. The first hypothesis need not delay us, for it is perfectly obvious that many of the special mental forms which we commonly speak of as feelings are neither appreciated as distinctly pleasant nor as distinctly painful, nor even as algedonic summations; but are often so thoroughly lacking in pleasure or pain that they are described as completely indifferent. Clearly the mass of the sensations of touch determined by the clothing I am now wearing can not be claimed to be either pleasant or painful, they are entirely indifferent; the same is true of the great body of organic sensations which I may note in attention at this moment if I choose to do so; and it is as certainly true of a vast proportion of the psychic items which I have described as mere emphatic experiences as such.

And turning to the emotions with which feeling is so often identified we find the same situation, for it certainly can not be said either that all of them are pleasant or painful, or that they always appear as pleasure-pain summations. For, as I have already said, surprise, which is clearly an emotion, is usually indifferent,—so notably indifferent, in fact, that Bain takes surprise as the best example of what he calls 'neutral excitement.'

It seems to me that we must grant that when we sift matters down we find that what we mean by feeling is really a special form of presentation, meaning by this term a special psychic emphasis,—a peculiar and significant mental item: and that as such it is qualified by pleasure-pain, as all presentations or specific mental items are.

But it is just as clear that other mental items, our sensations of taste, for instance, which are not types of feeling at all, are also qualified by pleasure and pain: and this fact in itself suffices to prove that feeling and pleasure-pain can not be identified.

Sec. 7. We may pass then to the consideration of the second hypothesis, *viz.*, that pleasure-pain is the simplest form of feeling, and that in our complex mental life it develops into mental forms which are radically different from itself.

This view seems to be that very generally accepted by those who hold that in pleasure-pain we have 'feeling proper,' although they treat the whole question with such vagueness that one can scarcely be too confident in this regard. At all events, I am able to find no other hypothesis to justify their position, and it is one the acceptance

of which is not unnatural for psychologists who in their youth were deeply influenced by the teachings of the associationists and who thus became accustomed to treat the doctrine of mental chemistry with more respect than was its due.

But upon careful examination we do not find this second hypothesis in any measure satisfactory. Touch and the organic sensations and the emotions, to which the term feeling is so commonly applied, while often noticeably pleasant or painful, vary very much from time to time in their algedonic qualification; the self-same sensations and emotions are sometimes pleasant and sometimes painful. And clearly this variation of pleasure-pain qualification could not occur without any noticeable change in the essential nature of the mental states referred to if the pleasure or the pain were of their very essence.

And turning, finally, to that mere emphatic experience as such to which the term feeling is often applied, we may note, as we shall see later, that there is some little ground for the assumption that this mere experience is developed out of what we have a right to call feeling. But to argue that this mere experience is developed out of pleasure-pain as 'feeling proper' involves at the outset a begging of the very question just here at issue, *viz.*, whether pleasure-pain is 'feeling proper'; in favor of which position I am unable to discover any evidence whatever.

Feeling, as I have said, is a special presentation or mental item; and it is to be granted that it is one in connection with which pleasures and pains of marked form are commonly given, but there is no more reason for holding that feeling is itself a pleasure-pain development than there is for holding that presentations other than feeling, all of which are also algedonically qualified, are developed from pleasure-pain.

II

Sec. 8. We have thus found that we gain no satisfactory result by an attempt to discover the essence of feeling in any one of those special mental items to which the common man applies the term in every-day speech. Our study of the problem, however, certainly suggests that this feeling is distinctly noticeable in connection with all the special mental forms we have been thus considering, and we are naturally led, then, to ask whether there is any psychic characteristic which is peculiarly marked in connection with the special mental states to which the term feeling is so commonly applied.

Such a characteristic I find in what we call 'subjectiveness'; and in using this word we express the fact that the mental states referred to bear very close relation with that special presentation which we

describe as the ego of self-consciousness—the empirical ego—the every-day self of the common man.

Sec. 9. Let me at first ask you to note how true it is that this subjectiveness is involved with each of those mental items which are commonly described as types of feeling.

We have noted that in careless speech we often identify feeling with touch and the organic sensations. In such cases I think we usually use the word feeling to refer to mere emphatic experience as such, to which usage we refer below. But apart from this, touch and the organic sensations are closely associated with the body, with which in turn, as all recognize, the sense of subjectiveness is closely associated. In other words, touch and the organic sensations are not naturally considered to have any extrinsic or objective connotations, as is the case with sensations of sight and hearing. That it is for this reason that the common man thus applies the term feeling is made clearer when we note that so soon as the psychologist comes to look upon touch and the organic sensations as objective to the ego of self-consciousness, he finds no more tendency to apply the term feeling to them than to any other of the sensations, *e. g.*, sight or hearing.

Our emotions, which are so often spoken of as feelings, are notably subjective, as involving the reaction of the whole psychic system upon perceptual states.

The most frequently noted characteristic of our pleasures and pains, which Ward and others speak of as 'feeling proper,' is certainly their subjective reference.

And finally when we use feeling to refer to mere emphatic experience as such—when we say we feel cold, or feel despondent, for instance—we refer to what is inherently appreciated as our own, and disconnected from the field of presentations, which are identified with the field that is objective to the empirical ego.

Sec. 10. The thesis, then, which I present for your consideration is this: that the experience which the psychologist properly describes as feeling is a certain form of presentation, a certain special psychic emphasis, which is vague and elusive in its content, but which when more clearly defined develops into what we call the empirical ego, or the every-day self of the uninstructed man. The 'feeling attitude' is the attitude of the empirical ego not yet become explicit.

Sec. 11. It is, of course, impossible in the few moments still at my command to present to you the full evidence favorable to this view; it will appear in a book I have lately finished. But the thesis is so simple that it will be easily carried in mind, and I shall ask those interested to note, first, that an analysis of the empirical ego

and of feeling discloses the same general characteristics in each, although these are less distinctly given in feeling, as under our theory we should expect would be the case; second, that, on the one hand, the action of presentations within the field of attention in relation to feeling is found to be like that in relation to the empirical ego; third, that, on the other hand, the efficiency of feeling in relation to the presentations within the field of attention is markedly similar to the efficiency of the empirical ego in relation to these same presentations. For instance, the effect of feeling upon belief is almost identical with the effect of the empirical ego upon belief in states of self-consciousness. But, as under my view, feeling is less explicit than the empirical ego we are prepared to find no evidence of voluntary efficiency in relation to belief until the feeling develops into the more explicit empirical ego, which is given in the field of attention as the agent in the act of will.

Sec. 12. One point referred to above I must mention here. Consciousness in my view is a vastly complex systematized psychic mass, in which during our active life psychic emphases occur which are commonly spoken of as presentations. These psychic emphases, or presentations so called, must, of course, appear as arising out of this complex psychic mass.

If any indefinite systematized psychic mass, narrower than the psychic mass as a whole, can itself appear as a presentation or psychic emphasis, we shall have in it a simulacrum of the whole broad, systematized, psychic mass out of which our normal flow of psychic emphases or presentations appears to arise.

But under our hypothesis feeling is just such a minor, indefinite, systematized psychic mass which, as a whole, appears as a presentation or psychic emphasis. We are, therefore, not surprised to find that careful introspectionists, like Horwicz, for instance, have been led to hold that in feeling we have the fundamental psychic situation out of which all forms of psychic emphasis or presentation arise.

Sec. 13. In conclusion, I may be allowed to refer very briefly to certain views of important psychologists of which I have not spoken thus far.

Dr. James Ward, and in this particular he represents many others, tells us that in his experience 'feeling intervenes between sensory and motor presentations,' is 'a purely subjective state, at once effect of a change in receptive consciousness, and the cause of a change in motor consciousness, and is *not in itself a presentation*': that 'feeling as such is, so to put it, matter of *being* rather than of direct knowledge.'¹⁰

¹⁰ Encyclopedia Britannica article, p. 67. (Italics mine except in case of word 'being').

In my view this statement is inaccurate. When I speak of feeling as I have above, as a presentation of a certain form, I mean, of course, that it is given as a presentation to the non-presentable Self. That feeling is a presentation in this sense I do not think Dr. Ward could deny. What Dr. Ward apparently means to indicate in the above quotation is the fact that in states of self-conscious reflection feeling does not appear as a presentation to *the empirical ego*, but breaks away from this presentation and attaches itself firmly to the empirical ego itself, or loses itself in the empirical ego, or appears as absorbing the empirical ego. This is clearly in accord with my own introspection, and it is as evidently corroborative of the thesis here presented; for under my theory feeling is subjectiveness pure and simple, and this means that as the empirical ego becomes explicit feeling necessarily attaches to, or is resolved into, this empirical ego.

Sec. 14. That the doctrine of those who follow Dr. Ward has failed to carry conviction is evidenced in the fact that some of our ablest psychologists have in late years rejected it, and have suggested others, which, however, appear to me to be equally unsatisfactory. Two of these, those presented by Professor Wundt and by Professor Royce, seem to demand our serious consideration.

Professor Wundt looks upon feeling as a complex state which varies in three directions: (1) as to pleasure-pain; (2) as to excitement-depression; (3) as to tension-relief.

Now, as we have already seen, feeling does display pleasure-pain very markedly; but if Wundt's position is to be defended it would seem to be necessary to show in relation to his first 'direction' that all pleasure-pain is feeling, and this, as we have seen, can not be maintained. Of the second of Wundt's 'directions,' it is to be said that excitement-depression is a distinctly emotional series, and as such is, as we have seen, of necessity closely bound up with the empirical ego, and therefore under our view with feeling; but, as we have already shown, in itself, as emotional, it can not be held to be of the essence of feeling. In Wundt's third 'direction'—tension-relief—we have a series which conditions the appearance of emotional states, of which we have just said all that is necessary; but surely in tension-relief itself we have, so far as I can see, no essential or unique qualification of feeling as such.

In turning to Professor Royce's theory,¹¹ I am inclined to apologize for the few words devoted to it. But this brevity is accounted for partly by the limits of time at my command, partly by the fact that what I have already said concerning Wundt's theory applies in part to Professor Royce's, but mainly by the fact that Professor Royce does not claim that his theory is more than tentative. He

¹¹ 'Outlines of Psychology,' pp. 177 and 178.

holds that 'our feelings differ from one another in at least two decidedly distinct and relatively independent ways,' first, as to their pleasantness and unpleasantness, and, second, 'as being more or less either feelings of restlessness or feelings of quiescence.'

As to the first point, what I have said above of the relation of feeling to pleasure-pain will suffice. As to the second point, it is to be noted that feelings of restlessness and quiescence are special emotional states (if the latter can be called a special mental state at all), and as such are, as we have seen, not of the essence of feeling as such.

Finally, I may say a word in reference to the relation between this thesis and esthetic theory in which I am especially interested.

We must assume, I think, that no theory will be upheld by careful thinkers unless they find in their experience an explicit or implicit corroboration of their view. The esthetic experience of an appreciative person in the presence of a great work of art might well be described as a resolution of consciousness into pure feeling. As I see a great Rembrandt or hear a Beethoven symphony, I am overwhelmed, and in retrospect find my state of mind difficult to state in terms of normal experience. But all will agree that the state given is one of feeling, a state of saturated feeling, one might call it. And, as such feeling, it is given as a mental item, or 'presentation,' as we say. At the same time self-consciousness seems to disappear. In the moment of my ecstasy feeling is there, but I do not appreciate *myself* as feeling. Nor does my ego appear as discriminating. Beyond this the object which brings the feeling state becomes of no importance. I care not who painted or who composed, nor do I care through what means or by the emphasis of what elements the glorious result is gained. Self-consciousness is dissolved away and in its place we have as a psychic emphasis that mere psychic mass which under my view is identical with feeling, and which is, as I hold, of the nature of the empirical ego not yet explicit.

We thus have in my view the experience upon which is based that general movement of thought—with which I may say, by the way, I do not find myself in sympathy—which from its germ in Kant developed through Schiller, and Schelling, and Hegel, and which looks to esthetics—to the realm of beauty—for a reconciliation between the outer world and inner consciousness—between nature and the self—a view which finds its latest interpretation in Miss Puffer's 'Psychology of Beauty,' where we are taught that 'the beautiful object possesses those qualities which bring the personality into a state of unity and self-completeness' (p. 49), the nature of beauty being 'in relation of means to an end; the means, the possibilities of stimulation in the motor, visual, auditory and

purely ideal fields; the end, a moment of perfection, of self-complete unity of experience, of favorable stimulation with repose.'

HENRY RUTGERS MARSHALL.

NEW YORK CITY.

THE TERMS 'CONSCIOUS' AND 'CONSCIOUSNESS'

IN an early number of this JOURNAL¹ I gave a brief account of the historical evolution of the significations of the term 'idea' in the English language. I wish now to consider the terms 'conscious' and 'consciousness'; not, however, so much with reference to their historical development as to the different types of meaning they represent and convey. I think this discrimination will be found not altogether irrelevant to current problems and discussions. I take my material again from Murray's Oxford Dictionary.

1. An early use emphasizes the 'con-' factor: a social fact. Consciousness means joint, or mutual, awareness. "To be a friend and to be conscious are terms equivalent" (South, 1664).² While this use is obsolete, it persists in poetic metaphor as attributed to things, *e. g.*, the 'conscious air,' etc. It also clearly influences the next sense, which is,

2. That of being 'conscious to one's self': having the witness to something within one's self. This is naturally said especially of one's own innocence, guilt, frailties, etc., that is of personal activities and traits, where the individual has peculiar or unique evidence not available to others. "Being so conscious unto myself of my great weakness" (Asher, 1620). Here is a distinctively personal adaptation of the social, or joint, use. The agent is, so to speak, reduplicated. In one capacity, he does certain things; in another, he is cognizant of these goings-on. A connecting link between 1 and 2 is found in a sense (obsolete like 1) where conscious means 'privy to,' a cognizant accomplice of,—usually, a guilty knowledge. It is worth considering whether 'self-consciousness,' in both the moral and the philosophic sense, does not involve this distinction and relation between the self doing and the self reflecting upon its past or future (anticipated) doings to see what sort of an agent is implicated; and whether, in short, many of the difficulties of self-consciousness as a 'subject-object' relation are not due to a failure to keep in mind that it establishes connection between a

¹ Vol. I., No. 7, p. 175.

² I owe to the Editor of the JOURNAL this interesting reference to Hobbes ('Leviathan,' ch. VII.): "When two, or more, men know of one and the same fact, they are said to be conscious of it one to another; which is as much as to know it together." Hobbes then uses this to explicate the moral meaning of conscience.

practical and a cognitional attitude, not between two cognitional terms.

3. 'Conscious' is also used to discriminate a certain kind of being or agent, one which knows what it is about, which has emotions, etc., *e. g.*, a *personal* being or agent, as distinct from a stone or a plant. 'Consciousness' is then used as short for such a being. It denotes all the knowledges, intentions, emotions, etc., which make up the differential being or activity of such a being or agent. This practical and empirical reference to a specific thing is seen clearly in sub-sense (a) where 'conscious' means intentional, purposive, and (b) where it means undue preoccupation with what concerns, invidiously, one's self (the bad sense of 'self-consciousness'). 'Consciousness' thus marks off in general the difference of persons from things, and in particular the characteristic differences between persons,—since each has his own emotions, informations, intentions, etc. No *technically* philosophical sense is involved.

4. 'Conscious' means *aware*: 'consciousness,' the state of being aware. This is a wide, colorless use; there is no discrimination nor implication as to contents, as to what there is awareness of,—whether mental or physical, personal or impersonal, etc.

5. The distinctively philosophical use (that defined as such in the dictionary) appears to be a peculiar combination of 2, 3 and 4. It is, in the words of the dictionary, "the state or faculty of being conscious, as a *condition and concomitant* of all thought, feeling and volition." The words I have italicized bring out the difference between thoughts, etc., characterizing the peculiar quality of a specific being or agent, and something which in general lies back of and conditions all such thoughts. Consciousness is now one with mind, or soul, or subject, as an underlying condition hypostasized into a substance. This identification of 'mind' and 'consciousness' leads to Locke's familiar doctrine (1690), "Consciousness is the perception of what passes in one's own mind." Awareness is borrowed from sense 4, but is limited to what is 'in the mind' only. Meanwhile the 'private witness' sense of 3 more or less intentionally colors the resultant meaning. Consciousness is distinctly 'one's own' perception of 'one's own' mind. As a net result, we get a private type of existence (as distinct from private cognizance); of which *alone* one is directly or immediately aware (as distinct from the anything and everything of 4), while, moreover, enough is retained of the concreteness, the *thingness*, of 3 to make this a *special* stuff or entity, although the specific and practical character of the personal agent is eliminated, a 'condition' back of particular purposes, emotions, etc., being substituted.

6. Then we have a comparatively modern adaptation of 3, illustrated in a quotation from Dickens (1837): "When the fever left him and consciousness returned, he found," etc. The formal definition given is, "The state of being conscious regarded as the *normal condition of a healthy, waking life*." (Italics naturally mine.) The corresponding term 'conscious' is defined as "having one's mental faculties actually in an active and waking state." (It is interesting to note that here, too, the earliest quotation dates no further back than 1841.)

I hardly think that any one who is aware of the ambiguous senses in which the term consciousness is habitually used in philosophical discussions and of the misunderstandings that result, possibly of one's self and certainly of others, will regard the foregoing as a merely linguistic contribution. It is no part of my present intention to note the implied philosophical bearings, save to suggest that meaning 5 begs as many metaphysical problems as is likely ever to be the privilege of any one word; that considerations based exclusively on 4 are not likely to be conclusive against positions that have 3 especially in mind, and *vice versa*; and that 6 seems to give the sense which underlies the psychological use of the term and to give (either by itself or in connection with 3) a standpoint from which the psychological sense can be kept free from the logical implications of the 'awareness' problem in general, and from the metaphysics of 5. To take the term 'by itself' is perhaps more appropriate for 'structural' psychology, while to take it in connection with a person or agent (sense 3) is appropriate for 'functional' psychology. But in the latter case, it should be understood that 'consciousness' means not a stuff, nor an entity by itself, but is short for *conscious animal or agent*,—for something *which* is conscious.

In making these suggestions I do not mean to indicate a belief that the different senses have no common qualities or appropriate cross-references. On the contrary, I believe that the connection of the logical meaning of 'awareness' with the facts involved empirically and practically in the existence of a certain sort of agent (especially as the latter itself becomes the subject-matter of natural science) determines one of the most real problems of present philosophy. But in discussing these problems nothing but good could come from stating explicitly the *prima facie* or immediate denotation of the terms used.

JOHN DEWEY.

COLUMBIA UNIVERSITY.

DISCUSSION

REJOINDER

EXPERIENCE contains objects not accidentally, but essentially, private, and it contains objects essentially public.' To illustrate this 'empirical,' 'commonplace' distinction of private from public objects Dr. Bush names my views, since he could never have known them had I not informed him of them; and, again, the teacher's opinions in contrast with his physical person, as he silently faces a class. The obvious answer seems to be that opinions that can be made known to others are but 'accidentally,' not 'essentially' private—like one's back teeth.

I objected to Dr. Bush's statement (parentheses mine): 'the actual test whether my visual object (*i. e.*, a private object, for no public object could be an hallucination) be chair (*i. e.*, public object) or hallucination (*i. e.*, private object) would be to find out whether you too see what I do (*i. e.*, have a private object like mine.)' But if a private object can be public it is not 'essentially' private. And to speak of such private objects, I urged, is to return to the consciousness of an object as distinct from the object, the very distinction Dr. Bush denied. Even dreams, I said, are not essentially private, because they can be known to others. And again, *according to Dr. Bush's account, as above quoted*, our first-hand knowledge is of private objects, and publicity is tested by and means a certain character of private objects. What then becomes of the 'empirical' and 'obvious' distinction between private and public objects, which Dr. Bush in his reply merely reasserts?

PERCY HUGHES.

UNIVERSITY OF MINNESOTA.

THE PRIVACY OF CONSCIOUSNESS

DR. HUGHES may well object to my statement as thus interpreted. In that objection he has my heartiest support. Yet I must acknowledge, and I do so with pleasure, that he has made me realize that the phrase 'private object' is a more ambiguous one than I had supposed. Let me see if I can fairly represent the position which claims that whatever privacy may attach to consciousness is a matter of accident and does not touch the nature or constitution of psychical objects. I never meant to deny that the consciousness of one person, his ideas, emotions and sensations are objects in the experience of others. All social relations, probably all moral relations, depend upon the fact that the consciousness of

my fellows provides objects in my own experience and *vice versa*. How absurd to say that the consciousness of the wife is not an object in the experience of the husband—a matter of his constant and intimate concern! The ambition of young writers is to make their thoughts public. We might fairly say that in normal life an idea is essentially something to communicate, and that the more publicity an idea demands and succeeds in getting, the more intense and energetic and worth having it is. A world in which the consciousness of one could not become an object in the experience of another would be a world without the possibility of society or of human culture. Why, then, say of consciousness that it is characterized by a property of essential privacy—a statement that seems to fly in the face of any normal experience.

One can illustrate until one is tired this publicity of consciousness. It does not, however, in the least contradict the fact which I intended to indicate by using the term 'privacy.' It seems to me, therefore, that my critic summons me to defend rather a word than an idea. For the idea is simply that we can not look into one another's minds. Empirically, at least, a stream of consciousness can have but one owner. Could it conceivably (without resorting to metaphysical theory) have two owners? Can your toothache conceivably be my toothache? Or can your enthusiasm or regret conceivably be mine in the same sense and the same way that it is yours? Of course, we say 'your joy is my joy and your sorrow is my sorrow,' but that is a manner of words. And, of course, one suffering pain seeks a physician and the pain of the sufferer forthwith becomes an object in the physician's experience, and it might become an object in anybody's experience, while only the one person in all the world can suffer this identical pain. The pain surely presents itself as the kind of fact that only one person can experience directly and immediately; it is characterized by a property which I have called privacy, a property which seems to characterize the object here in question in an essential way. However many persons make this object (the pain or any other sensation) an object of will attitudes or of scientific curiosity, there is but one who can experience its content in the way of direct inspection. And why? Simply, it seems to me, because it is that kind of a fact.

But the characteristic mark of privacy in the above sense (and I never proposed any other sense) certainly does not attach to physical objects. There is nothing in their nature to prevent their content being perceived immediately by as many observers as you like. Whether or not they are ever perceived at all, they are of an essentially public type.

Perhaps I should say something in defense of my use of the word 'object.' I mean only any fact, thing, feeling or situation, any simple portion of experience or any experience-complex to which I can attend, of which I can say 'that thing there' or '*that* fact' or '*that* group of facts.' I have in mind what Professor Dewey means when he writes 'Experience is always of *thats*; and the most comprehensive and inclusive experience of the universe which the philosopher can obtain is the experience of a characteristic *that*.'¹ It may be that in the minds of many the word 'object' is so closely associated with the word 'objective' that to talk of subjective objects seems, to say the least, a fantastic usage. I should be surprised, however, if any one should object to the notion of a subjective or a psychical *that*. I mean, therefore, by an object simply a '*that*.'

As Dr. Hughes, so far as I can see, has not yet denied to consciousness the property that I intended to point out in my use of the adjective 'private,' nor the property I intended to point out in calling consciousness object or objects, I conclude that his criticism is really that the word 'private' is misleading or, at the best, ambiguous. I admit the ambiguity; I hope, however, that my meaning is now clear. As to the word, I care nothing for that and I will look for a better one.

If now I try to improve upon the term 'essentially private object' with a view to avoiding its evident ambiguity I might say: any case of consciousness is a *that* or a group of *thats* of such a nature that their content can be immediately experienced by only one. Of course this one, when it forms an item in the experience, is another '*that*.'

I must beg not to be understood as claiming that the above definition is either helpful as leading to inferences or new observations, or would be maintained in any final statement about reality. To return to my first example, the chair on the opposite side of the room. Whatever the chair may be from a final and absolute point of view, that chair is empirically a chair, made of wood, manufactured at Grand Rapids, Michigan, shipped to New York and purchased by me. So far as its nature is concerned, anybody else might have purchased it. It is a public object, not metaphysically and ultimately perhaps, but empirically. But the sensations I have when I sit in it, my recollection of how it looked in the store where I bought it, my intentions with regard to it, can not be shipped in a freight-car and delivered by a van at my door, while I, perhaps, am asleep. With logical implications or meta-

¹ This JOURNAL, Vol. II., p. 398.

physical consequences, I am wholly unconcerned here.² I seek only to give an empirically accurate description of a type of experience. The chair is *in the first place* a public object. What it is *in the second place*, I do not know yet. And if some one say this is indeed so obvious and commonplace as to be not worth mentioning, I reply that it may indeed be so. But an important principle is involved. We can not expect to have much success in saying what experience is in the second place until we have taken pains to say what specific experiences are in the first place. We must describe specific experiences, and specific types of experience without regard to metaphysical consequences, and take our chances as regards philosophical results. And I certainly do not deny that in the relation of the object which I popularly call myself to other objects, both public and private, we have the logical and metaphysical problem *par excellence*.

In closing may I beg the readers of this JOURNAL not to believe that I claim any originality for the opinions I have sought to defend? The criterion of 'privacy' I take directly from Professor Royce and Professor Münsterberg. The idea that the entire content of experience is object, I got, I think, from a paper by Dr. Miller in the *Psychological Review*.

WENDELL T. BUSH.

COLUMBIA UNIVERSITY.

DR. BAIRD'S CRITICISM OF THE IOWA STUDIES IN PSYCHOLOGY

DR. BAIRD'S review of my paper in the *University of Iowa Studies in Psychology*¹ seems to be seriously misleading. My article describes 'A Case of Vision Acquired in Adult Life.' The reviewer persistently attacks the incompleteness of the study, but fails to mention that I expressly state it to be 'a brief preliminary report.' And I add, "Unfortunately, as yet there has not been time to prepare the group of normal records for comparison, so that the conclusions expressed in this paper must be largely tentative in nature." In regard to omissions, it should be further stated that Dr. Baird completely overlooks two summarized conclusions in the paper which were most important. The irradiation illusion was found to be reversed and color vision was abnormally keen. The reversal of irradiation I have been able to

²To be sure, in my first discussion of this subject (this JOURNAL, Vol. II., No. 21), I was interested in seeing how the definition bore upon a metaphysical problem, but the two undertakings are wholly distinct.

¹This JOURNAL, Vol. II., No. 25.

demonstrate again recently in another case of congenital blindness shortly after the operation for cataract.

Misrepresentation becomes more direct when he takes the 'haphazard' nature of my tests on passive touch as an illustration of lack of accurate and quantitative tests in the other sensory fields. He neglects to give the reason why the tests on passive touch were not made more systematically. Miss W. showed 'no peculiar sensitivity' here. We, of course, had no reason to suppose that she would be different from other trained blind people. Time was too precious to waste on unnecessary tests. The reviewer describes a test for active touch (omitting the vital part of the description so far as method and accuracy are concerned) and says such a test is 'unmeaning as it stands.' (Yes, as Dr. Baird states it.) As described in my paper, however, the test was to tell under how many sheets of paper of specified texture and thickness the position of a piece of wire of specified size, which was laid horizontally or vertically on a piece of glass, could be distinguished. I believe that it is the best test for active touch that has been devised. Dr. Baird is amused by the statement that Miss W.'s pitch discrimination was 'not unusually keen.' Her record when tested by tuning forks was a discrimination of 8 vibrations at international *a*. It may be added that the average record of 19 women students, using exactly the same method, was 9 vibrations.² A discrimination of .3 vibrations, which Dr. Baird claims to be 'normal,' is certainly not confirmed in this laboratory. The records here indicate that that degree of keenness does not occur more than once in a hundred subjects. Besides the tests on touch and hearing, he gives no other instances of 'haphazard and inaccurate' work, unless it be an experiment devised to show that Miss W. had acquired single binocular vision. The test consisted in judging when two balls were 'at the same distance' from the subject. By focusing both eyes together, instead of using one alone, her accuracy doubled. The reviewer says, "It seems unfortunate that Dr. Miner does not take the reader into his confidence at least to the extent of stating the size of the balls and the absolute distances at which they were suspended." These two facts have little bearing upon the characteristic demonstrated, namely, the change in her accuracy. So far as he is concerned, Dr. Baird admits that 'what this experiment is intended to demonstrate is not clear,' but he criticizes the result without understanding the purpose of the experiment. Finally, the reviewer misrepresents even the condition of Miss W.'s eyes by stating only that she had 'a (!) cataract removed,' whereas she had cataracts removed from both eyes.

² *University of Iowa Studies in Psychology*, II., p. 56.

In view of Dr. Baird's criticisms, it is perhaps necessary to explicitly state that a series of experiments on an adult is limited by the time which the subject can give for the tests. Although Miss W. generously gave six weeks of her time without compensation, her frail physical condition forbade prolonged experiments. The preliminary and brief report was thought advisable to draw forth suggestions for further experiments which may yet be made.

JAMES BURT MINER.

THE STATE UNIVERSITY OF IOWA.

REVIEWS AND ABSTRACTS OF LITERATURE

La filosofia di Schopenhauer. GIUSEPPE MELLI. Firenze, 1905. Pp. 320.

This is a careful and clearly put presentation of Schopenhauer's world-view. It obviously aims to be nothing more than just this, for it avoids all aggressive criticism and, for the most part, detailed historical comparisons. Nevertheless, much is said which is the fruit of patient thinking; but, as this thinking falls chiefly in line with the usual interpretation of Schopenhauer, it can not be discussed without inquiring into all Voluntarism. The following few points are those which seem to be the most original contributions of the little volume: after admitting (p. 11) that Schopenhauer's critique is in no sense a psychology, but rather an intuition, the writer seeks to show that it is equally far from being a metaphysics in the classical sense, inasmuch as the Kantian hypothesis of *Dinge an sich* is abandoned for 'a system of inner meanings of phenomena' (p. 67-68). Schopenhauer has no Absolute, not even an absolute Will; his doctrine of the will is only an analysis of immediate experience, nothing more. In distinguishing between spiritualistic and empirical doctrines of the will, the writer shows Schopenhauer's view to be wholly different from either in that it regards all motion not as the effect, but as the phenomenal aspect, of will (p. 77). Here, though, the critic agrees too uncritically with his hero in saying that voluntary motion is the only fact of nature which we can know through and through. It is time that this favorite 'bluff' be called. In the chapter on Spontaneity in Nature, too, the usual Schopenhauerian error is repeated of confusing spontaneity in nature with spontaneity of nature. It may well be questioned whether all voluntaristic metaphysics does not rest upon this very confusion; all so-called spontaneity may belie its name in so far as it may, perhaps, be local and essentially so. We have, at all events, no good grounds for assuming more than this, even if we do feel that spontaneity is possible. Most unfortunate, though, is the critic's failure to clear up an ancient difficulty in Schopenhauer's theory of conceptual knowledge; consistently with this theory, the critic reiterates that scientists do not deal with reality itself, but only with conceptualized nature, but he, like Schopenhauer, does not undertake to explain that volition itself, however much it may be immediate in individual experiences, is, for all purposes of dis-

cussion and investigation, equally well a 'mere concept.' The futility of ingenious intuitions appears here most glaringly. And when it is said (p. 103 f.) that known forces and laws are mere descriptions, why must the reader be supposed to infer that these are hence misrepresentations? In the chapters on Platonic ideas and esthetic intuition (especially p. 155 f.) it is held that Schopenhauer solved the esthetic problem over which Schiller and Körner could not agree. It is quite right, at least, to say (p. 159) that Schopenhauer initiated the interpretation of esthetic experiences now known as *Einfühlung*. The ethical is the dominant element in Schopenhauer's world-view, we are told; 'negating will' is itself a positive act (p. 308), and in saying this it is probable that the critic passes beyond Schopenhauer, of whom it is hard to say that 'he kept intact all the original ethical motives of Platonism and Kantianism' (ib.). That he did virtually grant to will the power of self-transcendence is now obvious, but it may be questioned whether he fully realized this. His expounder, however, is not willing to regard him as a pessimist in any sense of the word; knowledge, a product of will, can control and, if necessary, crush the will that creates it, which is to say that the intellectual life—in the broadest sense—altruistically colored, is 'serene, unselfish, disillusioned, fearless' (p. 320). Schopenhauer is called, in conclusion, a classicist and not a romanticist; a classicist because he has written the *theory* of an ever-living romanticism. "He has renewed for philosophy its feeling for the marvelous . . . and has said much about life and death that can not be denied" (ib.). Perhaps these views, too, can not be affirmed; and this ought to be taken into consideration before we withdraw Schopenhauer from the class of philosophical impressionists.

The exposition, on the whole, is admirable, particularly when viewed as a sympathetic popular presentation of a German thinker to a large and eager reading public such as Italy is now able to boast of.

WALTER B. PITKIN.

COLUMBIA UNIVERSITY.

Primitive Traits in Religious Revivals: A Study in Mental and Social Evolution. FREDERICK MORGAN DAVENPORT. New York: The Macmillan Company. 1905. Pp. xii + 323.

This volume is part of the present movement to understand religion through studying it inductively. It is to be associated with the volumes of James, Coe and Starbuck on religious matters, though the author here is a sociologist, and not without a Spencerian vein. The preface quotes approvingly the saying of Harnack that 'religion has its secrets, but no mysteries.' The business of the author is to lay bare the secrets of the old-time religious revival. The process of analysis goes on under our eyes, critically, yet sympathetically and constructively. The material gathered from wide sources is interesting in itself and the style is easy and natural. One may regret that not many first-hand observations of revivals in process are made by the author, that his material is almost exclusively historic; still his work of interpretation is vital throughout, —there are no dead pages.

The content of the book admits of a brief statement; some readers, indeed, may find its message somewhat repetitious and long drawn-out. The secret of the revival, as the authors discovers it, is the stirring of man's primitive nature. His primitive nature includes such elements as fear, joy, imitation, suggestion and imagination. The seed-thought is the instability of the nervous system of primitive man. The revival is held to be 'essentially a form of impulsive social action.' Illustrations of these primitive forces are shown in the cases of revivals among Indians, Negroes, the Scotch-Irish in Kentucky in 1800, the Scotch-Irish in Ulster in 1859; also in the revivals conducted by Jonathan Edwards, John Wesley and Nettleton, Finney and Moody. For all the results of such revivals the passional element in man has been mainly, though not exclusively, the explanation. Though not expecting the passional to be eliminated from man's nature, the author does expect and desire the rational to come in and control it. He holds that religion is normal and natural, and not merely abnormal and supernatural, as revivals tend to reveal it. "I would take straightforward issue with those who still hold that the subconscious, the imperfectly rational, the mystically emotional, in spite of all its vagaries, is, *par excellence*, the channel of the inflow of divine life" (p. 279).

The good temper and constructive character of the whole is illustrated in the final chapter on 'The New Evangelism,' the program of which the author finds in 'the earnest preaching of great truths in their modern light, a straightforward appeal to the intellect and conscience of men, liberalism attuned to faith and spiritual service, a passionate devotion to the highest ethical ideals, a social rather than an individualistic church that shall truly set men on [at?] work for the kingdom of heaven.'

The volume may come with practical profit into the hands of students and teachers of religion, and ministers. It will somewhat offend those who conceive of themselves as living in the natural world and of God as living in the supernatural world, whence upon occasion He visits men in unusual states, while at the same time it will gratify those who in increasing number hold to-day that all the world is one supernatural order and does not become less so through man's partial success in understanding it. In the end we may comprehend that the so-called 'natural' is only what man can grip of the one 'supernatural' life.

There is no index, and the book with its few topics and informal presentation hardly needs one. Typographical errors appear in the words 'but,' p. 181, and 'psychological,' p. 190.

H. H. HORNE.

DARTMOUTH COLLEGE.

L'agrandissement et la proximité apparents de la lune à l'horizon.

ED. CLAPARÈDE. Extrait des *Archives de Psychologie*, Tome V., No. 18, October, 1905. Pp. 121-148.

The horizontal moon again, and another explanation offered for that baffling illusion! And this time no appeal is made to the apparent form

of the heavens nor to the direction of one's gaze. The essential cause of the illusion is sought in the region of *affective* influences.

After a very clear and compact survey of the nine most dignified explanations that, from time to time, have given temporary satisfaction, each summary being followed by a statement of the most weighty objections to each view, the author proceeds to the statement of his own position.

The primary fact that seems incontestible to the author is that *the moon appears nearer when at the horizon*. Thus it seems to him and to those whom he has questioned. If one sees otherwise, it is hinted that auto-suggestion is operating in the direction of the demands of the usual theory. Here, then, we have a fact that is incompatible with the doctrine of physiological optics that the distance to which a retinal image of a given size is projected determines the perceived size of the object.

In approaching a solution of the matter that shall resolve this last-named incompatibility, a factor of the situation is noted which, in the author's opinion, is an important element in the final explanation. We have a feeling, he says, that the heavenly bodies when at the horizon are *terrestrial objects*. This feeling is most marked in the case of the moon. When, not expecting to see the latter, the ball of light suddenly strikes the eye from behind houses or trees, its size appears enormous. It is then an object among objects, and we reckon with it accordingly. Once recognize it, however, as the moon and deliberately force it back upon the sky, and its magnitude decreases. A fact that contributes largely to the tendency to regard the horizontal moon as a terrestrial object is that it belongs to the 'terrestrial zone,' the zone of objects with which we have to do.

But how may the moon appear both nearer and larger at the same time? In particular, why should the giving of a terrestrial character to the horizontal moon cause an apparent increase of its magnitude? The author's reply is simple and direct. The solution of the difficulty must be sought in *the affective life of the individual*. Terrestrial objects *interest* us more. They are matters of our *concern*, for we must adjust our conduct to them. And this interest, this concern, gets itself expressed in terms of perceived magnitude. "On the contrary, what happens in the sky interests us but little. Having had no occasion to adapt ourselves to objects there, we have not learned to represent to ourselves their size. By the very fact that they cease to concern us, these objects lose their importance for us; and this diminution of importance is, for our perception, translated into a diminution of size."

In support of the general contention that affective states may influence spatial perceptions, the author cites the cases of children and travelers who are prone to overestimate what most moves them. Even the well-known 'illusion of the silk hat' is explained on the basis that hats are interesting objects with personal and social significance.

By this appeal to affective factors the author believes that we have an explanation for those variable features of the illusion so hard to ex-

plain on any other theory,—those variations of size that appear from day to day and from individual to individual.

It is admitted that other than affective factors may collaborate in the production of the illusion. But as to what these other factors may be we are not informed.

The reviewer sympathizes strongly with any attempt to explain the illusion of the horizontal moon in other terms than those of the perceived form of the sky. But he finds himself quite unconvinced by the presentations of this paper. To be sure, our perceptions are sometimes influenced by our feelings. The fish that we finally lose after moments of exciting struggle is never described as diminutive. And the moose that we fail to bring to earth possesses, we feel sure, a record head. But just as true is the further fact that these subjective magnifications are at once corrected when we get a calm view of the object in question, though our enthusiastic interest in this particular object is still great. If the fish is really caught, or the moose captured, the first exaggerated impressions of magnitude are modified. And still our interest and our concern may remain keen. Assuredly we often think of eminent personages as large of stature, as the author reminds us. But when they are actually present before us, do we *perceive* them larger than they really are? Does the lover, when first he becomes aware of his passion, experience a marked illusion in respect to the physical size of his maid?

Moreover, the question arises whether the difference in interest with which we regard the horizontal and the zenith moons is sufficiently great to account for the difference in the perceived magnitudes, this difference sometimes amounting (so it is alleged) to a fivefold or even to a tenfold magnification of the horizontal moon. And, furthermore, it is questionable whether the zenith moon is so far behind the horizontal moon in interest as our author would have us think. In certain respects the zenith moon is much more an object of our interest, since the various fanciful markings on its surface are usually studied at elevations where the illusion has vanished. And if one object that such interest is by no means a true concern, one may point to cases where perceptions of the disk high in the heavens are made under conditions of genuine and profound concern for the moon as a light-giving object in one's visible world of objects.

But as great as is the difficulty in correlating the perceived differences of size with the grades of interest bestowed upon the moon in its two extremes of position, a yet greater difficulty remains. For if this theory is held, it must do something more than account for that amount of magnitude which is expressed by the difference between the horizontal and zenith moons. This amount of difference it must indeed explain. But the real amount to be explained is the difference between the perceived disk of the horizontal moon and the magnitude that it would have for perception if its size were determined exclusively by the factors of retinal image and distance of projection. For manifestly the usual law of physiological optics is here, as elsewhere, operative. And since the horizontal moon is seen as nearer, its disk would appear *smaller* than

that of the zenith moon were the perceived size determined solely by projection factors. The influence of Claparède's affective factors must, therefore, be great enough to advance the magnitude of the horizontal moon from the size which its near localization would give it on the basis of projection to the size which it actually does have for perception. To expect this, it seems to me, is to foist upon 'interest' and 'concern' a far greater burden than they are able to carry.

The reviewer comes away from the reading of the paper with the decided opinion that, while Claparède's factor may well be cooperative, the chief determining conditions of the illusion are still to be sought.

The paper closes with the best bibliography of the topic known to the reviewer. And this, together with the brief summaries at the beginning, gives it a high value for handy reference.

A. H. PIERCE.

SMITH COLLEGE.

Ueber Urteilsgefühle: was sie sind und was sie nicht sind. A. MEINONG.
Archiv für die Gesamte Psychologie. August, 1905. Pp. 22-58.

The function of what Herr Meinong calls 'judgment-feelings' is presented by him in a more or less clear manner. Taking for granted the supposition that in an emotion of joy we have some object over which we rejoice, Herr Meinong gives a close analysis of a given situation in which such joy is felt. "One can not," says he, "feel any joy without apprehending a 'something,' an object, and it is evident that such apprehension is an essentially intellectual operation. It is, moreover, of special importance to determine more closely the nature of this intellectual process. I can not apprehend an object cognitively without mentally presenting it; on this point there is a consensus of opinion. But for this purpose will a bare idea do?" (p. 25, 26). This is the point which Herr Meinong proceeds to investigate and for this purpose takes as a given situation the case of a boy rejoicing over the possession of a steam-engine. Now it is evident that before his possession of the toy the boy may have wished for it and thought of it, but such wishes and thoughts did not give him the taste of real possession. On the cognitive side the joy arising from the act of possession is due to a conviction, a judgment that the engine is his own. This conviction, this judgment need not necessarily be formulated or expressed. It may exist as a 'judgment-feeling.'

Now supposing the emotional state to have a content, such content may be subject to further analysis. We can hardly represent the boy's joy over his toy with the words, 'I rejoice over my steam-engine.' In fact, what is usually taken as the subject of the judgment is not the subject at all. The feeling is not directed to '0,' but rather to the 'existence of 0,' to the fact that '0 exists' or to the fact that '0 has the characteristic N' and the like. We may differentiate these two moments by naming the one 'object' and the other 'the objective.' The 'objective' differs from the 'object' in that it refers to existential characteristics, functional properties, specific meanings, etc., which may reside in the

object and to which the judgment-feeling is directed. If, for example, I look upon the snow-covered street and venture the judgment, 'There is snow outside,' 'snow' is the object of my knowledge, 'that there is snow' its objective.¹ An emotion of the kind chosen presupposes, therefore, a judgment-feeling directed to some objective. Herr Meinong does not bring out the difference between object and objective as well as he might, and one must go to his '*Ueber Annahmen*' for further light.

The latter part of his discussion is taken up with a criticism of Herr Lipps's strictures on his views, and as I do not wish to drag the reader through a review of a review of a review, I shall here end my interpretation of Herr Meinong and add a few comments of my own.

The conviction, the judgment-feeling of which Herr Meinong speaks, can, I think, be analyzed still further. The point which seems to me of interest is just wherein the vague feeling of 'desire-for' is different from the stronger conviction or feeling of possession in the case taken for illustration. How does the boy's conviction or judgment-feeling that the toy is his own differ from his dim desire for it? It seems to me that the difference is primarily in the state of vividness produced by the more intense motor attitude roused in the former case, and I should suggest the term 'judgment-attitude' for that of 'judgment-feeling.' In the attitude excited by actual possession a series of motor adjustments is on the point of being realized, and the feeling exists that such series *can* be realized. The mere attitude of possession, the idea that the thing is one's own, starts a series of innervations which are on the point of explication in serial order and are accompanied by a body attitude which gives rise to more or less dim feelings of a kind like those roused in actual serial adjustments. The dilettante longing of a youth for the maiden of his choice is far different in vividness and in the attitude roused from the more intense conviction of a man who feels sure that the prize is his own. In the former case the motor attitude which tends towards serial explication and the body feeling roused in dim form by the conviction of possession (such conviction being the 'feel' of the body attitude) are absent, and in place may be a more or less vague wish, a pleasing picture, perhaps, or a wishy-washy sort of body state. The reverse is the case where the feeling of conviction is present.

It is just this judgment-feeling, this body attitude, which gives validity to the ideation concerned, to the 'reasons' involved. 'Bare' ideas may slide and slip around and still remain cold and meaningless, mere shades of the sensations, without this attitude which gives depth and backing to the ideas. Herr Meinong is eminently correct in enforcing the function of the 'judgment-feeling' in acts of judgment. Reason is by no means as 'pure' as some would have it. It would seem that even in the 'cool air and dry light of reason' there is a little warmth, even if not of the more torrid kind.

FELIX ARNOLD.

NEW YORK CITY.

¹ See Meinong's '*Ueber Annahmen*,' p. 153.

JOURNALS AND NEW BOOKS

JOURNAL FÜR PSYCHOLOGIE UND NEUROLOGIE. Band I., Heft 1 u. 2, 1903-4. *Zur Einführung in die Neue Folge unseres Journals* (pp. 1-3): OSKAR VOGT. - This journal, formerly the *Zeitschrift für Hypnotismus*, is now to be devoted to psychopathological problems, special problems in clinical psychology, or matters of especial significance in any allied field. There will thus be attempted a cross-fertilization of medical and psychological data. *Die Berechtigung der vergleichenden Psychologie und ihre Objekte* (pp. 3-10): A. FOREL. - The natural sciences are gradually becoming more exact and critical in their methods. They have also their methods of biological experiment, which may lead to new discoveries, while it is quite possible to experiment most carelessly and inaccurately by formally exact methods. *Plethysmographische Studien am Menschen* (pp. 10-71): K. BRODMANN. - Both in the sleeping and waking states occur rhythmical variations in volume of both brain and forearm or either which are independent of deep breathing or of any traceable external stimulus, which are termed, after Mosso, undulations. At the transition between sleeping and waking in either direction, and whether the transition is quiet or disturbed, the circulation tends in one subject to a series of successive variations. The individual movements of the blood-vessels in the single organs are independent of one another, and the vasomotor activities in various parts of the body must be in a high degree autonomous. Tables descriptive of the plethysmographic curves in sleeping, waking and transitions. *Ueber den Muskeltonus, insbesondere seine Beziehung zur Grosshirnrinde* (pp. 72-90): M. LEWANDOWSKY. - Refers especially to the 'Alten und Neuen Untersuchungen über das Gehirn' of Hitzig, and this investigator's remarks regarding the supervention of tonus upon injury to the cortical motor zone. The explanation given by Hitzig for the results of Bianchi appears insufficient. Characteristic for the symptom involved is only this: that the tension of that member operated upon varies from the normal, and that this variation is sometimes positive, sometimes negative. What is the most satisfactory definition of tonus? Whether there is a state of tonus during rest is an inessential question; there is, in fact, no rest, but the tension is every moment conditioned by efficient sensible stimuli.

Band I., Heft 3. *Friederich Goltz* (pp. 89-99): M. LEWANDOWSKY. - Obituary of Friederich Leopold Goltz, biographical and critical. *Beispiele phylogenetischer Wirkungen und Rückwirkungen bei den Instinkten und dem Körperbau der Ameisen als Belege für die Evolutionslehre und die psychophysiologische Identitätslehre* (pp. 99-110): AUG. FOREL. - The cumulative perfectibility of humanity exhibits three historic and prehistoric stages, leading from the arithmetical to the geometrical progress of civilization: (1) oral tradition, (2) monumental tradition, (3) written language. Analogies of human activities in the insect kingdom, agriculture, slavery and leishmaniasis. The machinery of life is quite unknown and unformulable. It is entirely unjustifiable to describe as mechanical

the functionings of the insect brain. *Ein Fall von hysterischem Stupor bei einer Untersuchungsgefangenen* (pp. 110-112): G. G. JUNG. - Detailed study of the case, which is purely hysterical in character. The principal symptoms are inconsequent use of language, high suggestibility and susceptibility to fatigue, lack of orientation, paresthesia, and the absence of katatonic manifestations. Clinically, the case is to be classed with Raecke's observations, through the medium of Ganzer's symptom-complex. *Kleine Beiträge zur Neuropathologie* (pp. 129-146): H. OPPENHEIM. - (1) Zur Differentiation der Neuritis und Neuralgie. (2) Zur Symptomatologie der Paralysis agitans. (3) Bemerkungen zur Lehre von Tic. *Die möglichen Formen seelischer Einwirkungen in ihrer ärztlichen Bedeutung* (pp. 146-160): OSKAR VOGT. - Part 3. C. Intellectual processes efficient through their emotional tone. (1) General effects of the emotions. (2) Intellectual processes efficient through their emotional associates. *Ueber discontinuirliche Zerfallsprocesse der peripheren Nervenfasern* (pp. 169-200): ERWIN STRANSKY. - Historical and Experimental. *Hebung epileptischer Amnesien durch Hypnose* (pp. 200-225): FRANZ RIKLIN. - Study of cases. Amnesia is favorably affected by a proper employment of hypnosis. Epileptic amnesias are not irreparable, but of purely functional nature. *Experimenteller und klinischer Beiträge zur Psychopathologie der polyneuritischen Psychose* (pp. 225-246): K. BRODMANN. - Study of cases. Both are Cerebropathia psychica toxemia (Korsakoff). Characterized by grave disorientation, and disturbance of the associative processes (to be continued). *Ein spiritistisches Medium* (p. 247): RINGIER. - Autohypnosis as an explanation of mediumistic phenomena.

Binet, Alfred. *L'âme et le corps*. Paris: Flammarion. 1905. 12mo. Pp. 288. 3.50 fr.

Boltzmann, Ludwig. *Populäre Schriften*. Leipzig: Barth. 1905. 8vo. Pp. vii + 440. 8 M.

Chamberlain, H. S. *Immanuel Kant. Die Persönlichkeit als Einführung in das Werk*. München: F. Bruckmann. 1905. 8vo. Pp. xii + 786. 12 M.

Duhem, P. *Les origines de la statique*. Tome I. Paris: A. Hermann. 1905. 8vo. Pp. iv + 360. 10 fr.

Freidmann, H. *Ueber ein physikalisches Endlichkeitsprincip aus den allgemeinsten Ausdruck der Naturgesetzlichkeit*. Leipzig: J. G. Krüger. 1905. 8vo. Pp. 64. 1.80 M.

Eucken, Rudolf. *Beiträge zur Einführung in die Geschichte der Philosophie*. Der 'Beiträge zur Geschichte der neueren Philosophie' zweite umgearbeitete und erweiterte Auflage. Leipzig: Dürrschen Buchhandlung. 1906. 8vo. Pp. v + 194. 4.50 M.

Frazer, J. G. *Lectures on the Early History of the Kingship*. London: The Macmillan Co. 1905. 8vo. Pp. xi + 309. 8s. 6d.

- Glawe, Walter. *Die Religion Freidrich Schlegels*. Ein Beitrag zur Geschichte der Romantik. Berlin: Trowitzsch und Sohn. 1906. Pp. viii + 111.
- Jowett. *The Socratic Dialogues of Plato*, with an introduction by E. Caird. Oxford: University Press. 1905. 3s. 6d.
- Mayer, Adolf. *Los vom Materialismus*. Bekenntnisse eines alten Naturwissenschaftlers. Heidelberg: Carl Winter. 1906. 8vo. Pp. 260. 5 M.
- Reinke, J. *Die Welt als Tat*. Umriss einer Weltansicht auf naturwissenschaftlicher Grundlage. Berlin: Gebrüder Paetel. 1905. 8vo. Pp. 505. 12 M.
- Salvadori, Guglielmo. *Das Naturrecht und der Entwicklungsgedanke*. Einleitung zu einer positiven Begründung der Rechtsphilosophie. Leipzig: Theodor Weicher. 1905. Pp. viii + 108.
- Schmid, B. *Philosophisches Lesebuch*. Leipzig: Teubner. 1906. 8vo. Pp. viii + 166. 2.60 M.
- Sollier. *Le mécanisme des emotions*. Paris: Felix Alcan. 1905.
- Wasemann, E. *Comparative Studies in the Psychology of Ants and of the Higher Animals*. 8vo. London: Sands. 4s. 6d.

NOTES AND NEWS

PROFESSOR H. K. WOLFE, formerly professor of psychology in the University of Nebraska, has been appointed to a new chair of educational psychology in the university. Professor Wolfe is now in the department of philosophy in the University of Montana.

DR. J. G. FRAZER has anticipated his new edition of 'The Golden Bough,' by publishing a series of extracts from it under the title 'Lectures on the Early History of the Kingship.'

THE French Association for the Advancement of Science will hold its next meeting at Lyons from August 2 until August 7, 1906. Professor Lippmann will be president.

DR. RICHARD HODGSON, secretary of the American Branch of the Society for Psychical Research, died suddenly at Boston on December 20.

GLASGOW UNIVERSITY will hold a memorial to Francis Hutcheson, professor of moral philosophy in the university from 1730 to 1746, on April 18, 1906.

PROFESSOR C. H. JUDD, of Yale University, has been appointed director of its summer school.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

THE DEFINITION OF 'FEELING'¹

THE Oxford English Dictionary groups under ten rubrics twenty different varieties of meaning in the use of the word 'feeling.' The first meaning given is, the action denoted by the verb 'to feel,' and the verb 'to feel' has assigned to it, under sixteen rubrics, thirty-three varieties of meaning. The variety in the shades of meaning attached to these terms is probably much greater. Such terms are evidently very ill adapted to form parts of the technical language of science. Any limitation of their meaning must be arbitrary; it is also likely to prove inconvenient.

The various meanings of the term 'feeling' seem all to be derived, directly or indirectly, from the primary meaning of perception by touch. To 'feel' an object is, in the first instance, to touch it or be touched by it. 'Feeling' denotes the act or process of such perception, or, again, the capacity for it, or, finally, its 'content,' i. e., the content of the specific present modification of the experience of the individual percipient, as distinguished from the perceived object,—the felt quality, or thing. Closely connected with this primary meaning is the reference of the term to all experiences which, like those of touch proper, are brought about by the direct contact of objects with the sensory surface of the body, but which are not obviously assignable to any special organ. All other meanings of the term appear to be derived from some likeness in the experience to which it is applied to these contact experiences. Certain features of the latter seem to be particularly operative in the derivation, *e. g.*, (1) the peculiarly vivid sense in many of them of the immediate, real presence of the object. Hence, analogically, 'feeling' denotes any apparently unmediated conviction of a fact, truth, etc.;² (2)

¹ Paper read before the American Psychological Association at its fourteenth annual meeting, at Cambridge, December 27-29, 1905.

² Cf. the case reported by d'Allones ('Rôle des sensation internes dans les émotions,' etc., *Revue Philosophique*, December, 1905), where the patient recognizes that the object or situation is one of affection, disgust, etc., but complains that it does not 'touch' her.

the frequent indefiniteness of the perception, and (3) the active exploration required to make it definite. The content of 'feeling' is, for the most part, badly localized, or not at all, and its internal and external relations are obscure. Almost any consciousness possessing this character may be called feeling. We have a feeling, *e. g.*, of the void to be filled in the effort to recall a forgotten name, a feeling of what the solution of a problem would look like, if we had it, of the direction to be taken in getting it, etc. And along with this, in all cases where we attempt to transform this vague consciousness into clear consciousness, we have a feeling of our activity in this regard akin to the experience of active exploration in touch. This possibly is one of the motives which have brought under the term all immediate experience of tendency, impulse and movement, as well as of the obstruction of such tendency, impulse or movement.

But apparently the chief motive in the extension of the meaning of this term lies (4) in the fact that experiences brought about by direct contact usually involve a more or less clear distinction between the modification of the body's own sensitiveness, as ways in which *we* are affected, and the qualities perceived as belonging to the impinging object, and that, in many cases, awareness of these, *our* states of being, is even more prominent an aspect of the experience than the perception of what is taken as their exciting cause. Hence the term 'feeling' is preeminently applied to all those sensory experiences—bodily sensations and appetites, pleasures and pains, emotions, passions, sentiments and moods, desires, convictions and resolves, and all kinds of appreciations—which are intimately identified with the self as *its* dispositions, active or passive, whether having or not having a reference also to 'objects.' The feeling may be a feeling 'of' or a feeling 'that,' a feeling 'for' or a feeling 'how': whatever the expression used, it seems in all cases to contain a reference to an immediate and intimate qualification of the subject's own sensitive awareness. Where, on the other hand, the reference to the object is emphasized, the consciousness, except in the special case of touch, is designated by some other term. We do not 'feel,' we 'see' colors and 'hear' sounds, 'taste' tastes and 'smell' smells. Yet formerly tastes and smells were 'felt,' and are so in dialect still;³ and we may clearly have a 'feeling' *for* colors and perspective, and may 'feel' the sound which is a buzzing in our ears. The distinctions are sufficiently significant.

Now I do not see why, without prejudice to any of the problems of psychological science, the term should not be used by psychologists

³ *E. g.*, '*suste spicere to fell and smell*' (c. 1300); 'there was no smell of fyre felt upon them' (Coverdale, Bible); 'he felt a nasty smell' (English newspaper, 1884). See *Oxford Dictionary*.

with the same wide latitude of meaning which it has in common life. The facts denoted by it would be various; various, therefore, would have to be the description and explanation of them. But in this regard we should be in no worse case than we now are when, with bewildering diversity of definition, the term is variously applied, apart from its special reference to perceptions of touch, to pleasure and pains, to emotions, to organic sensations and appetites, or again to only one or to several of these classes,⁴ or still again to some wider class of facts or to some still more inclusive aspect of mental life generally. Over against such diversity of usage which, were technical precision important, would constitute a veritable scandal in psychological nomenclature, it can not be too strongly insisted that the facts are precisely what they are and stand in precisely the same need of careful psychological treatment, however they may be named. Why not name the states here in question by their specific class names, call them pleasures and pains, emotions, appetites, etc., leaving the term 'feeling' to be freely applied, as occasion suggests, in all the variety of untechnical meaning which it has in common life? I can not but think that in this matter we have been unduly influenced by the Kantian doctrine of *Gefühl* and the vicissitudes of the whole German *Gefühlslehre* consequent thereon. Our best text-books now, happily, abandon the attempt to group the facts of the mental life under the three rubrics of cognition, feeling and will. It is to be hoped that this emancipation from the German tradition will leave us free to apply the term 'feeling' in a more natural, English sense, and either to abandon it as a technical term altogether or to find for it some new definition at once agreeable to the facts and to the genius of the language.

Two conditions seem to me indispensable for any more restricted, yet manageable, use of the term in psychology: (1) it must denote some particular class of facts, or some more general aspect of consciousness, for which the term would be appropriate; and (2) to be appropriate, it must not depart too widely in meaning from the established usage. Now the most general characteristics of the states referred to by the term in its common use appear to be, as we have seen, intimacy and immediacy in the connection of the content with the experiencing individual. If, therefore, the term is to be appropriately used, it must be used to designate such states or such aspects of mental life generally as possess this intimacy and

⁴Frequently the term is limited by definition to pleasure and pain, but usually the emotions and like states are included. A recent writer, seeking an 'exact' terminology, limits it to pleasure-pain and the obscure, unlocalized sensations of 'common feeling,' excluding the emotions, except as they contain these (Lagerborg, 'Das Gefühlsproblem,' p. 36, 1905).

immediacy. These qualities are, of course, preeminently characteristic of our experience of pleasure and pain. Everybody agrees in calling these feelings. But the qualities mentioned are not characteristic of them alone, and to limit the term 'feeling' to them, either to the concrete pleasure and pains or to the pleasant and unpleasant phases of these experiences, besides being arbitrary, would be exceedingly inconvenient.⁵ In this reference the question whether there may not be other primary qualities of feeling is of secondary importance. Nor are the marks by which it is commonly sought to oppose these states as 'feeling' to other modes of consciousness really determinative. They are 'subjective,' indeed, but so is every other mode of consciousness. They inform us 'of our own internal mental condition' (Angell), but they are not the only states in which our mental condition is revealed to us. Besides, if feeling is thus informatory, it can not be sharply distinguished from cognition, unless cognition is arbitrarily limited to knowledge of external objects and relations.⁶ The most thoroughgoing way of distinguishing feeling, limited to pleasure and pain, is to deny that it can ever be directly cognized at all (Ward). But this surely is flying straight in the teeth of the facts. Feeling is a mode of consciousness, and all consciousness is awareness. How could one *feel* pleased without being conscious of pleasure? And similarly of pain.

One of the most plausible definitions of feeling is given by Royce, who defines it⁷ as 'our present sensitiveness to the values of things'; but the only values recognized under the definition are those which experiences possess as pleasing or displeasing, as disturbing or composing, and as variously combining these qualities. These qualities may be allowed, indeed, to have unique generality and importance, but to limit the values directly present in consciousness to them seems to involve a questionable psychological theory. Is the sense of beauty, for example, merely the feeling of a quiescent, or acquiescent, pleasure in line, color and idea, together, let us say, with the balance of muscular tensions involved? Possibly; but the opposite assumption is at least equally probable, that it is a unique feeling into which these, and any other elements that may be discovered in the experience, enter in their systematic unity. Moreover, the term 'value' in the definition is ambiguous. Everything whatever has some value in some respect. In what respect are the values recognized in feeling valuable? We can not answer for

⁵ Cf. Stout, 'Analytic Psychology,' I., p. 121.

⁶ "Cognition informs us of objects and relations external to ourselves, whereas feeling informs us of our own internal mental conditions." Angell, 'Psychology,' p. 257.

⁷ 'Outlines of Psychology,' p. 167.

feeling or for the self, for the self here in question is the feeling self, since that would involve us in an obvious circle. But, unless some other explanation is forthcoming—and I do not see what it could be—the definition only amounts to saying that we arbitrarily choose to call states of being pleased and displeased, restless and quiescent, etc., states of feeling, and no others.

All such qualities as pleasantness and unpleasantness, so far as they qualify the contents of consciousness generally, may fittingly be called feeling tones. The emotions, on the other hand, are characteristically feeling attitudes. Equally immediate and intimate, and equally symptomatic of the condition of the experiencing individual, are the so-called bodily sensations and appetites, such as hunger and thirst, drowsiness and fatigue, freshness and vitality. These, therefore, on our principle, must be reckoned among the feelings. But if we include these 'sensations,' where are we to stop? Must we not go on and include also all sensations, of every kind and description, since these too are, in the first instance, immediate and intimate modifications of the individual's consciousness? I think that we must. Unless blue and green, for example, affected us as different, how could we ever recognize and name them as such? But the principle applies to every content of consciousness, and to the whole 'stream of consciousness,' as immediately experienced. I see no reason whatever why we should hesitate, as certain psychologists do, to assume feelings of relation, of contrast, of judgment, of phantasy, etc.

From this point of view I would define 'feeling' as the immediate consciousness of the modification of individual experience, as such; and I would define *a* feeling as any content of consciousness, however constituted, regarded as the immediate present modification of such an individual experience. What is important to distinguish is the immediate modification of the individual's consciousness from the functions of knowledge and action it subserves. The term 'feeling,' as thus used, denotes no class of mental facts or contents of consciousness in particular, but refers to a general aspect of consciousness. From the genetic point of view the distinction between object and subject, which leads us to refer cognition to the objective side of the relation and the feelings to the subjective, did not originally exist. Instead, we have reason to assume a qualitatively distinct manifold, related and held together in some sort of unity, which persists amid its experienced changes and tendencies to change. Such a consciousness, according to our definition, would be a wholly feeling consciousness. As mental life develops, the functions of cognition and conation become variously modified and increasingly important. But the functions of consciousness can never be sepa-

rated from its immediate content. Distinctions in the content are purely distinctions of reference. The content of cognition and the content of conation, viewed psychologically, are precisely the same content as the content of feeling, except that in the one case it is considered relatively to its place in the function, while in the other it is considered as part of the immediate conscious experience of the individual.

H. N. GARDINER.

SMITH COLLEGE.

THE TERM 'FEELING'¹

MY conception of the common element involved in the various applications of the term 'feeling' does not greatly differ from Mr. Marshall's 'subjectivity.' I should define feeling as the unanalyzed and unlocalized part of experience; meaning by unanalyzed that which is not introspectively resolved into qualitatively different components, and by unlocalized that which is not referred to a definite region in space, whether on the body or beyond it. We should further, it seems to me, distinguish between conscious processes which are not, as a matter of fact, analyzed and localized at a given moment, and those which by their essential nature resist analysis and localization. As an example of the former class, take a name which one is endeavoring to recall. It hovers on the border line of clear consciousness, but the conditions are not favorable for its entrance into the focus of attention; it is unanalyzable at the moment, and may be described, therefore, as a feeling; but if it comes into clear consciousness it can be analyzed and is not a feeling, but an idea.

Between a case of this kind and the group of mental processes which always and through their very nature resist analysis and localization there lies an intermediate group: namely, processes which are not, under ordinary circumstances, analyzed and localized, but which may be, under special conditions. Here I would place the characteristic groups of organic sensations which form part of emotion, as well as the so-called 'feeling of effort.' Ordinarily, as they occur in our experience, these form unanalyzed masses. The reason for this fact is, of course, that when they occur there is not only no need to analyze them, but urgent need to analyze, or at least to attend to, something else. The individual's mental energies are, in emotion or mental effort, directed of necessity to something other than his own organic processes. But the psychologist, with his

¹ Discussion before the American Psychological Association at its fourteenth annual meeting, at Cambridge, December 27-29, 1905.

more or less artificial conditions, has nevertheless succeeded in analyzing the conscious effects of these processes and localizing their components; when he does so, they are removed from the realm of feeling and placed in that of sensational fusion.

In the third place, the ultimately and absolutely unanalyzable and unlocalizable processes include two classes. On the one hand, there is that group of mental facts called by Professor Calkins 'relational elements,' some of whose members are referred to by Professor James as 'the feeling of but,' 'the feeling of if,' and so on. The significance of these, it appears to me, is the following. They are remnants of remotely ancestral motor attitudes, and they resist analysis now because of their vestigial nature. Take the 'feeling of but,' for example: the sense of the contradiction between two ideas, present when we say 'I should like to do so and so, *but*—here is an objection.' If we trace this back, what can it have been originally but the experience of primitive organisms called upon by simultaneous stimuli to make two incompatible reactions at once, and what can that experience have been but a certain suspended, baffled motor attitude? Similarly with 'the feeling of if,'—'I should like to do so and so, *if* a certain condition favors'; the primitive representative of this must have been the experience of an animal called upon to suspend all reaction until a definite added stimulus was given. Space forbids further illustration, but it seems to the present writer that most, if not all, of the relational elements have had a similar origin. Finally, pleasantness and unpleasantness occupy a unique position among the unanalyzable and unlocalizable processes, as representing the most fundamental of all primitive motor attitudes, the positive and negative reactions. It will be seen, by the way, that the antithesis 'pleasure-pain' is incompatible with the conception of feeling as essentially unlocalized. Pain, being localized, and in the case of dermal pain very accurately so, should, I think, be classed as a sensation; the proper opposite of pleasure being the unpleasantness which attaches to pain, as well as to many other sensations and sensational complexes.

MARGARET FLOY WASHBURN.

VASSAR COLLEGE.

DISCUSSION

PROFESSOR JAMES'S 'HOLE'

But continuous transition is one sort of a conjunctive relation; and to be a radical empiricist means to hold fast to this conjunctive relation of all others, for this is the strategic point, the position through which, if a hole be made, all the corruptions of dialectics and all the metaphysical fictions pour into our philosophy. 'A World of Pure Experience,' by William James, this JOURNAL, Vol. I., p. 536.

WHEN a mind knows its own so-called 'past states,' Professor James explains the cognitive function so involved to be one of 'continuous transition.' When two minds 'know one thing,' he explains the cognitive function here involved to be one of 'meeting.' He characterizes the former as 'continuous,' as 'unbroken,' as involving no 'gap.' It performs wholly within one mind. In a word, it is purely solipsistic. The later function, that of 'meeting,' he describes as 'discontinuous,' as involving a 'gap' or 'break' that is 'positively experienced and noted.' It performs between minds. In a word, it is the 'hole' that bridges his pluralism. Finally, Professor James attempts to explain his 'meeting' in terms of his 'continuous transition.' Plainly the intelligibility of his entire system hangs upon this—upon his success in constructing his 'meeting' by means of his 'continuous transition,' or in identifying them as one and the same sort of 'hole.'

By way of examining this we first note him declaring, unequivocally, that 'consciousness' or cognition 'stands for function and not for entity'; stands for the non-entitative function of 'continuous transition.' And we next recall that Professor James, in his 'Psychology,' pretty well exhausts the parliamentary stock of the English language and much of that of several other languages, in demonstrating that the 'addition' or 'association' or like gluing of any sort of mental entities, in order to make of them the 'integral' and 'unbroken' unity of any mind or state of mind, is unqualifiedly 'unintelligible,' 'inadmissible,' etc.; as, for example, when Mill 'associates' entitative sensations, and Clifford 'adds' entitative mind-stuff atoms. In short, the continuous, unbroken unity of the mind, and this rejection of entities and of their addition, are the distinctive feature of Professor James's 'Psychology.' 'Transition' is his function for getting rid of such entities and additions, and for continuously preserving the mind's unity. By it alone 'the torch is handed on,' a continuously unbroken unit. And now in his philosophy it is 'to hand the torch' between units.

But this 'transition,' if it means anything at all (and I, for one, accept it fundamentally), means that when one speaks of the 'successive states' of any transition or of any mind, the word 'is' applies to the present one of these states in a way it does not apply to any others of them, or to any and all of the preceding states. Unless this be the meaning of 'transition,' all past states must exist, if not eternally as entities, yet for longer or shorter reaches of time, in the manner of entities. And for Professor James to be found 'intelligible,' or as he says of other writers, not to be found 'lob-sided and blowing now hot, now cold,' he must never be caught juggling with the verb 'to be' in a way to contradict this meaning of 'transition' or to make it thus apply to past states entitatively. When he says any states or experiences 'go,' thereafter the words 'is' and 'exist' must not apply to them otherwise than figuratively and fictitiously. No *metaphysical* use must be made of them. Literally, they must remain 'gone' out of existence absolutely and forever. Literally *all* the 'former states' have passed by 'continuous transition' into the one 'is' state. In this sense they no longer 'sleep undisturbed in their past'; they have been 'disturbed' by transition into something absolutely new which, alone of that mind, 'is.' All else of that mind, in the sense of 'undisturbed sleep,' absolutely 'is not.'

Moreover, since Professor James is to construct his universe 'empirically' or on the same plan by which he constructs each mind, therefore all minds whatsoever that he postulates—be they man minds, monkey minds, infusoria minds, protoplasmic minds, thing minds, ion minds, interstellar minds, vacuum minds, universal-fluid minds, or whatever sort of mind he will explain our plenum physics and present evolutionary science by, '*when he comes to panpsychism*'—in short all existence whatsoever, throughout his universe, must be this same sort of present-tense existence that 'transition' alone permits anywhere. His 'sheet of india-rubber' universe must have no past-tense series. If he speak of 'the intersection of two series' both series must *be* simultaneously. All must be one 'contemporaneous' *is*.

Anything less than this—as well for his individually transitive mind, for his 'two minds,' or for the universe—would simply commit Professor James to such entitative mind-stuffs and 'additions' as he has exhausted human language in rejecting, deriding and proving 'unintelligible.' How are we surprised, then, in turning to his account of how two minds 'meet' and 'know one thing' to find him explaining this by postulating that the thing *does* remain in its 'undisturbed sleep,' in precisely this sense that his 'continuous transition' forbids?

After explaining how a 'pure experience,' 'the pen,' transforms by 'continuous transition' into 'my-consciousness-of-that-pen-of-my-youth,' he continues:

"If this pass muster as an intelligible account of how an experience originally pure can enter into one consciousness, the next question is as to how it might conceivably enter into two.

"Obviously no new kind of condition would have to be supplied. All that we should have to postulate would be a second *subsequent* experience [or mind] *collateral* and *contemporary* with the first *subsequent* one [or mind], in which a similar act of appropriation [or 'transition'] should occur. The two acts [or 'transitions'] would interfere neither with one another nor with the *originally* pure pen. It *would sleep undisturbed in its own past*, no matter how many *successors* went through their several appropriative acts' [or 'continuous transitions']."

Behold, herein, how the words I have italicized ('subsequent,' 'collateral,' 'contemporary,' 'originally,' 'sleep undisturbed,' 'successors,' etc.) juggle with the verb 'to be' in precisely the way we found should not be done for Professor James to remain intelligible! Moreover, I exclaim: How are we surprised! because, with all due respect to Professor James, 'obviously' a 'new kind of condition' *has* to be supplied, when we turn from the postulate of 'one mind' to that of 'two minds.' Under the first, the 'pure experience,' 'the pen,' is assumed *not* 'to sleep undisturbed in its own past'; while under the second he is 'obliged' to assume and to say it '*would*' so sleep. Otherwise his explanation of how the two minds 'meet' in it by 'continuous transition' would have no least appearance of intelligibility.

This becomes the more apparent if we recall that Professor James explicitly specifies a 'positive break' or 'gap' between all minds. Any sort of transit from one waking mind to another waking mind, therefore, must involve something fundamentally different from his 'continuous transition' of one state into another of the same mind. The latter is transformation, rather than transition. It is also purely solipsistic. And solipsistic transformation is as utterly unlike transition from mind to mind across a gap as any two occurrences possible to imagine. Whether or not 'pure experience' may go from *waking* mind to *waking* mind, or as to how they could be conceived to do this without involving the sort of 'additions' that he derides, Professor James, in so far as I recall, has never given the slightest intimation. Undoubtedly he will tell us of this, 'when he comes to panpsychism.' Meanwhile it should

be obvious that his 'sleep' is utterly irreconcilable with his present-tense 'transitions'; that transition from mind to mind is something fundamentally different from the continuous transformation of a single mind; and that his explanation of 'how two minds know one thing' is both inconsistent and inadequate for these double reasons.

Of course I do not found this criticism of Professor James on the single quotation I have given. The same juggling of the verb 'to be' or between waking 'is' and sleeping 'is not,' runs palpably through all his late philosophical writing. Here are further instances:

In his 'paint pot' simile, the same paint, the same 'undivided portion of experience' is made to appear now in a 'thing,' anon in a 'thought,' then again subsequently in a 'knower,' and still again subsequently in 'both groups simultaneously.'² But let the pure experience or 'paint' be the Great Pyramid of Khufu; strive to apply 'the same,' 'is' and 'exists' to 'it,' now in 'a thing,' now 'simultaneously' in the 'broken apart' minds of a multitude of ancient Egyptians, and now simultaneously in a multitude of modern 'knowers'; and the juggling with 'the same' 'is' and 'exists,' so required, becomes as vastly apparent to the careful reader as the pyramid itself to the beholder's naked eye.

On the next page, and following, Professor James discusses 'the one identical room' that may be 'both in outer space and in a person's mind.' In the former it may have 'had that environment for thirty years.' 'As your field of consciousness it may never have existed till now.' In the first 'it will take an earthquake and a certain amount of time to destroy it.' In the second, 'the closing of your eyes will suffice.' It can be 'spoken of loosely as existing in two places, *although it would remain all the time a numerically single thing.*' Now, obviously, the latter half of this sentence is spoken as '*loosely*' as the first. Literally, and in accord with 'continuous transition,' no 'single thing' ever does 'remain all the time.' It quickly ceases to exist absolutely. It can not be spoken of as existing, or as 'the same room,' save figuratively, fictitiously, and by juggling with the verb 'to be.' It is only by reason of this sort of juggling that Professor James's lengthy discussion of paradoxical somersaults and contorting convulsions is given the least appearance of philosophic reasoning. And the clear-minded ought to see that its final import reduces to 'pure' unintelligibility the moment that all minds and all things be held to the present-tense 'is,' as his 'continuous transition' strictly requires.

Further along our author makes merry with 'mental knives that

² This JOURNAL, Vol. I., p. 480.

will not cut real wood,' with 'mental triangles that will not wound,' and with 'real' objects that do 'the contrary.' And then, by way of showing how this difference between 'mental' objects and 'real' objects has genesis within his 'continuous transition,' our picturesque philosopher (or psychologist?) breaks forth into this noble immensity:³

"With 'real' objects, on the contrary, consequences always accrue; and thus the real experiences get sifted from the mental ones, the things from our thoughts of them, fanciful or true, and precipitated together as the stable part of the whole experience-chaos, under the name of the physical world. Of this our perceptual experiences are the nucleus, they being the originally *strong* experiences. We add a lot of conceptual experiences to them, making these strong also in imagination, and building out the remoter parts of the physical world by their means; and around this core of reality the world of laxly connected fancies and mere rhapsodical objects floats like a bank of clouds. In the clouds, all sorts of rules are violated which in the core are kept."

Now as a piece of solipsistic psychology this is one of the finest and truest things ever written. But never, for one moment, should it deceive any one into conceiving that the 'real knife,' the 'real triangle' or the 'real world' here mentioned 'is' the real knife, triangle or world of which *philosophy* treats. The 'real things' and 'real world' of Professor James's poem *'are'* affairs of a single mind. Does he deny that there 'is' any other world or mind? If not, how confusing to juggle the words 'real' and 'is' in two senses!

Finally, since I can not fill this JOURNAL with quotations, let us look at Professor James's definitions and uses of 'experience'! From his 'Psychology' we get this:⁴ "As universally understood . . . experience means experience of something foreign supposed to impress us." Plainly '*something foreign*' is not solipsistic. But from this JOURNAL we get these:⁵ "The *instant field of the present* is at all times what I call the pure experience." Plainly this is solipsistic; otherwise why '*the pure experience*'? Again:⁶ "The instant field of the present is always experience in its 'pure' state." The context seems to make this 'experience' *not* solipsistic; but in any case, since by 'continuous transition' one's whole field of mind *always* is 'the instant field of the present,' how then "is the instant field of the present *always* experience in its 'pure' state?" For, again:⁷

³ This JOURNAL, Vol. I., p. 489.

⁴ Vol. II., pp. 618-619.

⁵ Vol. I., p. 485.

⁶ Reprint, 'A World of Pure Experience,' p. 14.

⁷ This JOURNAL, Vol. I., p. 566.

" 'Pure experience' is the name I give to the *original flux* of life before reflexion has categorized it. *Only new-born babes*, etc., have the experience pure in the literal sense." Again:⁸ "A pure experience can be postulated of any amount whatever of span or field." And again:⁹ "I called our experiences, taken all together, a *quasi-chaos*." And again: "Experience is only a collective name for all these sensible natures"; that is for 'all the primal stuffs' with which Professor James 'starts his thesis.' While finally 'Experience,' with a capital 'E,' is the name he gives to the entire completed 'Weltanschauung' or rational world, whose 'cognitive' function *between minds* his philosophic writings are supposed to explain.

Now I ask if it is not plainly evident that it is this continual 'substitution' between '*present field*' and '*original flux*'; '*pure field*' and '*whole or conscious field*'; '*primal world stuffs*' and '*united mind*'; between '*experience quasi-chaotic*,' and '*experience orderly and conscious*'; between '*experience foreign*,' and '*experience imminent*,' and between experiences pure, experiences transitional, experiences solipsistic and experiences pluralistic—is it not this alone that makes the word experience appear to do consistent service among such varied contexts, and throughout Professor James's philosophical writings in attempting to construct a *present-tense Universe of Experience*, wherein *unit experiences* or minds *experience or cognize* each other by means of *transitive experiences* that bridge the 'gap,' 'break' or 'hole' that forever 'is' between them and never can be *an experience*? Are not 'all rules broken' here, as well in 'the core' as 'in the clouds,' and is it not *all clouds*?

Of course these criticisms are not made without due heed of what Professor James says about 'substitution.'¹⁰ Well may he emphasize substitution, since his fundamental process of 'continuous transition' is mainly one of substitutions always. But obviously substitutes can no more wander from mind to mind than can 'originals.' Therefore 'substitution,' instead of sufficiently explaining 'knowledge between minds,' as Professor James apparently would have us take for granted and believe, merely emphasizes *all the more* the need of explaining how either originals or substitutes can give us such knowledge.

Professor James's root difficulty is precisely that of every philosopher who conceives that some sort of 'pouring,' entitative, contential, or functional, from one mind to another, is requisite for explaining cognition between them. But if it be clearly recognized, as since Hume it should be, that the validity of any theory of knowl-

⁸ This JOURNAL, Vol. II., p. 181.

⁹ This JOURNAL, Vol. I., p. 543.

¹⁰ This JOURNAL, Vol. I., p. 541.

edge can only be assumed, and forever must remain hypothetical under any and every case of assumption, then it should be as clearly recognized that any sort of 'pouring' between minds is entirely superfluous for explaining cognition between them. Professor James tells us that he '*postulates* your mind' because he 'sees your body acting in a certain way.' But if this postulate is *correct*, that your body and mind *do* exist, and *do* act in the proper way and moment for his 'seeing,' then his 'seeing' is correct, however solipsistic all things and minds may be; and, given this fact, there is no need of any 'functional' pouring between minds, or of any further and duplicate postulate *to establish its validity*. Similarly, if he *postulates* the universe, and this postulate is correct—if the universe *does* exist and *does* perform in lawful accord with one's perceptions and conceptions, however solipsistic these may be—then the *validity* of our knowledge of the universe rests sufficiently on the correctness of this postulate, and needs no other in turn to *validate* it. In a word, *lawfulness* is sufficient for knowledge. No 'pouring' of any sort is needed.

In short, the *validity* of any theory of knowledge is one thing. The *expansion* of any theory of knowledge, to cover all the details of the universe in accord with that theory and *to complete* our conceptions of it, is quite another thing. If all knowledge is necessarily hypothetical (and surely the history of philosophy has given sufficient warning that it is) then *this truth* can not be got over by making any sort of hypothesis of details. And finally, since the existence of things and minds other than one's own mind, and their lawful performance in accord with one's perceptions and conceptions must be *postulated* in any case; therefore it should be obvious that the further assumption of 'sleeps' that are forbidden, by 'continuous transformation,' and of 'meetings' that are fundamentally incongruous of it, in no least way substantiate the validity of Professor James's transitional philosophy and render his necessary primary postulates incredible just in proportion as these additional postulates are superfluous and contradictory.

HERBERT NICHOLS.

CHESTNUT HILL, MASS.

SOCIETIES

THE FIFTH MEETING OF THE AMERICAN PHILOSOPHICAL ASSOCIATION

THE American Philosophical Association held its fifth annual meeting at Cambridge, December 27-29, 1905, on invitation of the Department of Philosophy of Harvard University, on the

occasion of the formal opening of Emerson Hall. The exercises in connection with the opening of this building which Harvard University has devoted to philosophy and psychology were held on the afternoon of December 27, with Professor Münsterberg, chairman of the department, presiding. Addresses were made by President Eliot and Dr. Edward Emerson. The exercises were followed by a joint discussion with the American Psychological Association of 'The Affiliation of Psychology with Philosophy and the Natural Sciences.' The discussion was led by Professors Münsterberg, Hall, Angell, Taylor and Thilly. The Association was hospitably entertained by the Harvard Corporation at luncheon at the Harvard Union at one o'clock of the same day, and in the evening by Professor and Mrs. Münsterberg at their home. Professor Dewey, president of the Association, read his address on the evening of December 28, on the subject, 'Beliefs and Realities.' The address was followed by a smoker of the philosophical and psychological associations at the Harvard Union. At the business meeting, the following officers were elected for the ensuing year: President, Professor William James, of Harvard University; Vice-president, Professor Ernest Albee, of Cornell University; Secretary-treasurer, Professor J. G. Hibben, of Princeton University. The following is the program of the meeting with brief abstracts of the greater number of the papers read:

Swedenborg's Influence upon Goethe: FRANK SEWALL.

Swedenborg's work in philosophy and science was the source of Goethe's conception of the world-as-a-whole. There is a close connection between Kant and Swedenborg in the matter of their respective 'two world' doctrines, and Goethe was indebted for his acquaintance with Swedenborg to Kant, Herder and Schiller, but chiefly to Fränklein von Klettenberg, who, in the early seventies, at the beginning of the Faust conception, introduced Goethe to the 'Arcana' of Swedenborg. A parallel was exhibited between Goethe's 'Deutscher Parnass' and the little-known work of Swedenborg, 'De Cultu et Amore Dei,' in which man, the microcosm, reflects all the forces and activities of the universe. Goethe's discovery of the 'Book of Mystery' throws light upon the Faust monologue. Striking parallels exist between Swedenborg's 'Heaven and Hell' and Faust's translation to the spirit world. Goethe, in his letters and in a review, expresses sentiments identical with those of Swedenborg, and a lively interest in the latter's thought. The author finds in Faust's realization of the 'fair moment' in his vision before he dies an echo of Swedenborg's doctrine of mutual service. To Swedenborg, then, Goethe owed the *Weltanschauung* in which man accomplishes his

development through nature to the world of spirit, a conviction summed up in the closing lines of Faust. Recent literature was specified.

The Conditions of Greatest Progress in American Philosophy: D. S. MILLER.

The social development of philosophy has only begun. We are here still in an age of individualism, in which the favorite product is a 'system' bearing the personal stamp of its author. In its social development philosophy must be international, but a national branch may have a growth and fruit of its own. Philosophy will not be a science until it has achieved a consensus of experts, *i. e.*, a tested method and tested principles. It will not advance consciously toward this end until it is roused, *i. e.*, until we, its laborers, are roused to a sense of public responsibility. Thus roused, our first and constant endeavor must be to reach common ground. As steps toward this end, let us (1) use as plain English as we can; let us (2) practice a searching mutual criticism in the interest of an accurate method; let us (3) study the divergent temperaments that find expression in philosophy; let us (4) draw ourselves, on one side, closer to life by cultivating in common, as an essential part of philosophy, that *Lebensweisheit* toward which un-philosophic thought in America has contributed so powerful an impulse.

The Influence of American Political Theories upon the Conception of the Absolute: I. WOODBRIDGE RILEY.

The conception of the absolute in America assumes the form of monism in the seventeenth century, dualism in the eighteenth, pantheism in the nineteenth. Under Puritanism there is one, supreme, self-sufficient being, the sole ruler and disposer of all things; under deism a deity whose powers and functions are limited by a law outside himself,—the law of nature, inviolable and immutable; under transcendentalism the deity, becoming immanent, is submerged in nature, can scarce be distinguished from the cosmic processes. As with Spinoza, so with Emerson, the concept of God and the concept of the world-ground are identical, the absolute is one with the ordering and creative power of the universe. The problem is to show how these conceptions were influenced by the current theories of government—under absolute monarchy sovereignty being conceived as given by God to the king, under limited monarchy as shared between ruler and subject in a dual control, under representative democracy as vested in the people through the inalienable right of the law of nature. Here chief reference is made to such writers as

John Wise, Jonathan Mayhew and William Livingstone, who, relying on the European jurists of the *naturrecht* school, formed a genuine philosophic background for the whole movement.

The Kantian Doctrine of God as Compared with that of Plato and Aristotle: WILLIAM T. HARRIS.

A Philosophical Pilgrimage. Reflections of a Visit to the Homes and Abodes of Berkeley, Hume, Locke and Descartes: FRANCIS B. BRANDT. (Read by title.)

The Significance of Methodological Principles: ERNEST ALBEE.

Rationalism has been a far more persistent tendency in modern thought than is commonly recognized. While the critical philosophy, logically developed, carries one beyond rationalism, Kant's own system is rationalistic in important respects, both on the theoretical and on the practical side. This is plainly true of his so-called 'constitutive' principles, in so far as these are involved with his table of quasi-logical categories; but his actual use of 'regulative' principles, as applied to the solution of the problems of ethics, is open to much the same criticism. Yet regulative principles, in the larger sense of the methodological principles of science and philosophy, are the salvation of idealistic philosophy, if properly interpreted. In what relation, then, do these regulative or methodological principles stand to reality? Assuming, as we nearly all practically do, that reality can only mean experience in the largest sense, the difficulty seems to be that science becomes progressively abstract, while experience remains concrete. As our scientific principles become accurately formulated they seem to depart from the 'reality' of immediate experience. We forget that, in proportion as our methodological principles are practically helpful in organizing our knowledge and thus enabling us to deal effectively with concrete experience, they are necessarily informing us with regard to the organic constitution of reality. Not brute experience, but organized experience, is the real, though in a sense also ideal.

Induction and the Disjunctive Syllogism: W. P. MONTAGUE.

This paper will be printed in full in this JOURNAL.

Connection between Logic and Mathematics: MRS. C. LADD FRANKLIN.

Experience and Thought: J. E. CREIGHTON.

This paper refers to certain fundamental doctrines regarding the nature of experience which are involved in the current discussion of pragmatism. Its main thesis is, that completely to get rid of dualism, and to attain to a truly functional standpoint, it is neces-

sary to regard knowledge as the process through which a subject expresses and realizes a rational life.

Evolution and the Absolute: H. HEATH BAWDEN.

Conservation and evolution seem to present a fatal dilemma: the universe is either a closed system or a progressive growth. We can not believe that something has evolved out of nothing; this strikes at the rationality of the universe. But to regard the universe as a completed system strikes at its morality. The only recourse is to recognize the functional character of the distinction between essence and origin. The question of absolute origin can not be answered because it can not rationally be asked. The ideas of unity (conservation) and continuity (evolution) are true only when interpreted in terms of each other. Science must assume the conservation of the system within which she is working in order to make the evolutionary statement useful, while, on the other hand, the continual evolution of new meanings is necessary to make the conservation doctrine intelligible. This point of view reconciles evolutionism and absolutism by showing the functional nature of the absolute.

Consciousness and Evolution: FREDERICK J. E. WOODBRIDGE.

To regard consciousness as an outcome of evolutionary processes involves a radical transformation of many of the fundamental problems of modern philosophy, because these problems have been controlled by an initial conception of consciousness which is not evolutionary. This conception involves the positing of the mind as an original capacity or receptacle endowed with certain constitutional powers and needing the operation of some agency to give it the content known as the content of consciousness. The mind is thus conceived as an end-term of a relation. To the resulting line of thought the evolutionary conception of consciousness presents a striking contrast. Here the mind is not posited as an end-term, but rather processes of various sorts are conceived, undergoing continual reorganization until they become conscious, and thus lead to the recognition that as conscious processes they are not original but derived. Although the evolutionary conception has not been as clearly worked out as the other, it tends to render the general philosophical problems arising from the end-term conception of mind largely meaningless. This is significantly illustrated in the body-mind controversy, the doctrine of mental states and the current conception of evolution.

The Formal Fallacy in Subjectivism: A. E. TAYLOR.

Pure subjectivism, a doctrine still expressed by philosophical physicists and biologists, and occasionally by professional philosophers is the doctrine that what each state of mind knows is its

own occurrence as a mental process. This amounts to holding that the relation of percipient to percept is logically of such a nature as to have itself, and nothing but itself, as its sequent or second term. But there seems to be a logical impossibility of the existence of such a relation, since it inevitably involves an indefinite regress, and this regress is of an illegitimate kind, inasmuch as its completion would be necessary before we could even say what we mean by the second term of the perceptual relation, *i. e.*, the perceived object. To escape the illegitimate regress, we are bound to assume that there is at least one instance of a process of perception in which the relation (the process) and its sequent (the perceived object) are not identical. Thus the theory of knowledge must necessarily start from the standpoint of natural realism, though it does not follow that it must also end there.

Pure Science and Pragmatism: E. G. SPAULDING.

Certain branches of science, *e. g.*, the 'New Physics,' are pointed to by the pragmatist as exemplifying his theory of procedure. Accordingly let us examine the presuppositions, structure, etc., of physical science, and ask if they are compatible with pragmatistic assertions and especially with the philosophy of pure experience. Firstly, it is found that, by the symbolic judgments, qualities not given in perception are known. Nor can the meanings here be *imaged*. Secondly, to satisfy 'alogical' needs, knowledge has the purpose of conserving and furthering life; this by inferring, predicting. Such knowledge is a mental transition from perceived to unperceived. What is the ground for the validity of the inference? Not the plan itself! Necessity, invariableness, unequivocal connection are demanded. These are not found in the *conscious* series. Therefore only in an 'other,' a non-immanent, *i. e.*, transcendent, object. This is 'Denkobject' as opposed to 'Denkinhalt.' In knowing it the act of cognition transcends itself. Examination of the kinds of cognition shows self-transcendency to be an essential characteristic, and that the 'other' referred to may be *independent* of and *different in kind* from the cognitive act. So in perception the object of perception is not content. The false, *e. g.*, hallucination, implies the true, and this is implied by all. The object of perception is the transcendent causal 'Regelmässigkeit.' Examination of the philosophy of pure experience shows this to be inconsistent with the realism which the success of knowledge as an 'instrument' implies. The ground for the validity of knowledge (physics) is, therefore, external to knowledge itself, and is also object and source of knowledge. Experience must be defined in the light of this. Cognitive experience is different from the others; it

has transcendency; and scientific knowledge is different from perception. There is knowledge of the 'not-given,' if 'given' means consciousness.

Scholasticism and Reaction: BROTHER CHRYSOSTOM.

Scholasticism has too often been considered in its purely static phase; its dynamic side is far more in touch with our age. Its fundamental principles of act and potency, form and matter, present firm points of contact with modern science. While potency in general and matter in particular have traits in common with the accepted doctrine of the indestructibility of matter in the present meaning of that term, act and form are in striking harmony with the principles of modern biology. There was a dictum of the schoolmen to the effect that, 'Whatever is received is received according to the nature of the receiver.' Its truth receives confirmation, not only in the mineral kingdom, in the various kinds of motion classified by Aristotle, but also in the domain of the plant and the animal. Living organisms receive from heredity and environment, and this central nucleus they modify by their innate spontaneity and adaptability—a line of thought leading naturally to histology and morphology. Sensation and intellection were both held by the schoolmen to be reactions, but reactions of so excellent a nature as really to express in their perceptive phase some portions of external reality. On sensation depended passion, with its attendant muscular reactions; on intellection hung deliberate exercise of the will. Both these forms of cognition, as well as the resultant appetitions, contributed to build up habit, whereby many reactions gradually lapsed from consciousness and gave room for new reactions and new habits.

A Criticism of Psychophysical Parallelism as an Ontology: H. H. HORNE.

The theory of parallelism serves in three fields, *viz.*, psychology, the philosophy of evolution and ontology. As an ontology parallelism appears in a harmonizing rôle, agreeing with the materialist, the idealist, the dualist and the agnostic monist in their characteristic positions. In this rôle parallelism is too vague as an ontology to satisfy the adherents of any of the older systems. Essentially, parallelism as an ontology is dualistic, and, as such, is subject to the objection that being is a unity; for the unity of consciousness gives unity to any proposed dualism or pluralism; for unifying relationships must exist between the supposed dual parts: for, further, only a unitary being can be infinite. Again, parallelism does not explain why there should be any reality at all, nor why it should take the parallelistic form; it only formulates. And it makes a poor formulation in maintaining a parallelism between the psychical and the

physical, for individuality characterizes the psychical but not the physical, while extension, quantity and space characterize the physical but not the psychical. Thus parallelism takes seriously a mathematical figure of speech. Again, in denying causal relation between mind and body while affirming this concomitant variation it violates one of Mill's methods for determining causal connection. In justification it transforms the causal concept from equivalence, or identity, into concomitance. Further, no parallelist has been able to show how the unity of human consciousness can have arisen through the fusion of the psychic sides of atoms. And, if parallelism is right in maintaining that mind does not influence body, it can hardly maintain that evolution has proceeded along parallelistic lines, for in evolution the useless is eliminated.

The Affiliation of Philosophy and Psychology in Esthetics: ETHEL D. PUFFER.

The Quality of Psychical Dispositions: E. A. PACE.

REVIEWS AND ABSTRACTS OF LITERATURE

The Problems of Philosophy. HARALD HÖFFDING. Translated by Galen M. Fisher, with a preface by William James. New York: The Macmillan Co. 1905. Pp. xvi + 201.

This little work is the outcome of a series of *Gastvorlesungen* delivered by its distinguished author in Upsala, Sweden. In 1903 it appeared in German. Now it is published in an excellent English translation which has been prepared under the direction of Professor James, who also introduces Höffding's discussion with a characteristically incisive preface.

As a whole the book forms an 'introduction' to philosophy or 'outline' of philosophy conceived from the constructive, rather than the descriptive point of view. It presents in epitome Professor Höffding's mature opinions on the various philosophical questions—'so to speak, his philosophical testament,' James calls it—with abundant references to the more detailed discussions given in his larger works and to current philosophical literature of importance from other hands.

The problems of philosophy are reckoned four: the problem of consciousness, the problem of knowledge, the problem of being and the problem of values,—which last is subdivided into the ethical problem and the religious problem. At bottom these several problems may be considered one, for they all involve the fundamental question of the relation between continuity and discontinuity in the knowledge and the being of the world (pp. 5, 8). In general, Professor Höffding ranges himself among the

¹ Preface, p. v.

defenders of continuity, but always in a critical, rather a dogmatic fashion, and with express recognition of the presence in thought and being of 'irrational' factors. In psychology, he criticizes the attempt which some have made to class him with the associationalists (p. 18), defends the rights of descriptive against purely experimental or physiological psychology, and emphasizes the merely hypothetical and methodological character of his acceptance of parallelism or 'identity' (pp. 51-54). In epistemology, he prefers the economic theory of Mach and Avenarius (pp. 71 ff.) to the empiricism of Mill or the evolutionism of Spencer; and declares himself a symbolist, for whom truth is not static but dynamic, and who finds, in spite of the growing congruity between thought and its object, that 'there is always an irrational remainder, viz., in the relation of quality to quantity, in the significance which the time-relation has for the causal concept, and in the relation between subject and object' (p. 85, cf. pp. 85-115). The form of metaphysical inquiry is analogy. The problem of being, therefore, or the 'cosmological' problem, does not admit of complete solution, and metaphysics is more art than science (p. 127). The attempts at a solution depend upon the employment of 'type-phenomena.' In regard to the question of monism or pluralism, Höffding defends a doctrine of 'critical monism,' which, though it 'asserts the reality of time and hence the permanent unfinishedness both of being and of knowledge, can nevertheless still quite properly make of causality and rationality the type-phenomena of its view of the world' (pp. 136-137). In regard to the nature of reality, materialism is unsatisfactory, but there is ground for hesitation in adopting mind as our type-phenomenon. For we can not be sure whether, besides materialism and idealism, there may not be further possibilities of existence which our experience does not reveal (p. 143). In regard to being and becoming evolution through conflict is found wherever we penetrate the order of the world, and so we are entitled to class forms of being as lower or higher according to their places in the scale of development, though here most of all it becomes evident that it is impossible to attain 'an absolutely final concept of being as a whole' (p. 150). In ethics, also, the standard of continuity and coherence is used as the test of conduct, and the philosophy of religion is considered under the rubric of the conservation of values.

The rich suggestiveness of Höffding's treatise is indicated by this summary account of its contents. That it suggests points for criticism as well as of agreement enhances rather than diminishes its value. On the side of method, questions of completeness arise, in view, for instance, of the entire omission of esthetics from the discussion of the value-problem; and questions of precision: are the concepts of continuity and discontinuity carried through, or can they be carried through so many different fields without ambiguity of meaning? On the side of doctrine, many of Höffding's results will encounter dissent from thinkers of different schools. Thus the absolute idealist will oppose, or perhaps resent, the defense of the objectivity of the temporal order. And even critics

who, like the present reviewer, favor the conclusion which is reached, may doubt whether Höfding's argument is here at its best, although they will not fail to appreciate his final sentences: "If the time-relation is an illusion, it is another illusion of the second potency if we imagine that we can lightly rid ourselves of it. For us, existence can never be absorbed in thought without remainder" (p. 107).

The most general criticism, however, as James suggests (pp. viii-ix), and the most general regret, will be that the compass of the work is so restricted. The translation, as already intimated, is well done. Here and there roughnesses appear, and even sentences of doubtful meaning in their connections. But without the original at hand, it is impossible to determine whether such difficulties may not spring from the compactness of the author's treatment rather than from infelicities of rendering.

A. C. ARMSTRONG.

WESLEYAN UNIVERSITY.

Great Pedagogical Essays: Plato to Spencer. F. V. N. PAINTER. New York: American Book Co. 1905. Pp. 426.

The source method, which has been so fruitful in the study of general historical problems, has finally been applied to the study of the history of education, but the student and teacher, with limited library facilities and meager language training, do not find readily accessible adequate source materials, and the need of books giving judicious and typical selections is widely felt in normal schools and teachers' colleges. Professor Paul Monroe, of the Teachers College, Columbia University, published a couple of years ago (Macmillan) a capital handbook giving the very best source materials for the Greek and Roman periods, and he has promised a companion volume dealing with early Christian and medieval education.

Mr. Painter, in the volume at hand, has sought to compress within a little more than four hundred pages selections representative of educational thought and practice from the Greeks to our own day. He has failed signally in his purpose, and not wholly or mainly because of space limitations, but rather because of manifest lack of broad historic scholarship and clear pedagogic insight. His selections are in the main inconsequential fragments, and the translations are often poor. The scholarly student would at the very outset desire to know the source of the translations of the selections, but only in a few instances are we told. The selections from Plato's 'Laws' (rather than from the 'Republic') are in no sense typical and give no adequate notion of the great Greek idealist's views concerning educational theory; and the biographical sketch which precedes this selection (and the criticism holds true of them all) could not well have less value for the scholarly student.

The treatment of Rousseau's 'Émile' well illustrates the general weakness of the book. We are given but three pages of book one, in which Rousseau outlines his principles of education; and these three pages are apparently taken (without credit) from the rather poor trans-

lation by Eleanor Worthington. Random fragments are given from the other four books of the 'Émile'; but certainly one would search in vain in the thirteen-line selection from book five to get Rousseau's views on the education of women. If the treatment of Rousseau had to be compressed within fifteen pages, Mr. Painter would have rendered greater service to the student if he had confined his selections to Rousseau's general principles in book one, and he would have found Professor Payne's translation much more scholarly and authoritative than the one he uses. Of even less value are the excerpts from Pestalozzi, Fröbel, Horace Mann and Fénelon. But it would avail little to continue the criticism of a book of source materials that violates at every turn the fundamental principles of the source method of historical study.

WILL S. MONROE.

STATE NORMAL SCHOOL, WESTFIELD, MASS.

Empiricism and the Absolute. F. C. S. SCHILLER. *Mind*, July, 1905. Pp. 348-370.

This article is in substance a criticism of two important aspects of Taylor's 'Metaphysics,' its relation to pragmatism and its doctrine of the absolute. Mr. Schiller considers that Professor Taylor attempts to restate the orthodox Oxford intellectualism in terms that will be acceptable to the humanist, but that he fails in this because the positions are incompatible.

The doctrines which Professor Taylor, according to Mr. Schiller, takes directly from humanism, with more or less clear recognition of the fact, are,—the purposiveness of human thought and experience, which he seems to concede by his use of the language of purpose and teleology; the representation of metaphysics as the product of an *instinctive demand* of our intellect for coherency and consistency of thought; the recognition of the fact that science makes use of postulates which serve its practical purposes without being ultimately true; the denial of the possibility of an *a priori* theory of knowledge; and the use of expressions that can be interpreted only as radical empiricism, especially the statement that 'the real is experience and nothing but experience, and experience consists of psychical matter of fact. Proof of this proposition can only be given in the same way as of any other ultimate truth, by making trial of it.' Mr. Schiller considers that these doctrines can not be bodily transferred from humanism to intellectualism, and that in his attempt to transfer them Professor Taylor has only made clear the incompatibility of the two positions. Mr. Schiller discusses at length this incompatibility as manifested in Professor Taylor's account of the relations of appearance and reality; in his two criteria of metaphysical reality, 'the real is experience . . . and experience is psychical matter of fact' and 'reality is not self-contradictory'; and in his account of the relations of axioms and postulates. He claims that these views are in opposition to pragmatism in not recognizing that the true is useful and the useless untrue; in overlooking the fact that for the pragmatist it is not the

question of origin, but of past history, that determines validity; and in the claim that the intellect is not wholly practical and that logical consistency in thinking is its final criterion of ultimate truth, rather than that the intellect is practical throughout and that, thus, the truths of metaphysics are just as practical as the rules of conduct and methods of science; and in the other elements of intellectualism, for which the aim of philosophy is to understand rather than to transform experience.

Professor Taylor's doctrine of the absolute is rejected in its entirety by Mr. Schiller, who criticizes its derivation as perfunctory, and as depending really on the ontological argument, the validity of which is assumed rather than proven. For Professor Taylor the absolute is out of time and space, and so can not evolve. Our experience is, thus, only contradictory appearance, a position which is carried to its logical conclusion in the denial of the reality of evil, and from which we are not saved by the Bradleian doctrine of degrees of reality. Mr. Schiller criticizes the ontological argument and claims that Professor Taylor's absolute reduces to a mere postulate, which does not even stand the pragmatist test of usefulness. The only absolute that would be of use in explaining the facts of experience is one that is plastic, not rigid and unchangeable. But the demand for apriority which is characteristic of all rationalism precludes this alternative. Mr. Schiller concludes: "It would seem, then, that regarded as a postulate the absolute is a bad one because it does not work, nor secure us what we wanted: regarded as an axiom it stands—and falls—with the ontological fallacy."

The main contention of the article, that Professor Taylor's metaphysical position is incompatible with humanism, may be granted without accepting the conclusion, implied in the discussion, that empiricism, expressed either as humanism or pragmatism, is the only alternative to the metaphysical doctrine of an immutable substance.

WILLIAM L. RAUB.

KNOX COLLEGE.

Die Pseudomotorische Funktion der Hirnrinde. Dr. RICHARD STERN.
Leipzig: F. Deuticke. 1905. Pp. 27.

The author proposes the extraordinary hypothesis that all nervous impulses are centripetal. At all times the muscles are generating some kind of energy, which tends to flow from the periphery to the motor ganglia. These, however, can spontaneously assume various states of conductivity, that is, of increased or decreased resistance. If this is high, little energy is thus drafted away from the muscle and the latter relaxes; but if the resistance is low, much energy is conducted away from the muscle and the latter contracts. Somewhat similarly the cerebral cells that mediate consciousness spontaneously vary their resistance. But here when the resistance is high the incoming energy is transformed into conscious energy, as in a highly resisting wire electricity is transformed into heat. Many facts speak for the varying resistance of cerebral nervous paths, and among these, notably, that the same bodily activities

(presumably, therefore, involving the same nervous paths) can be performed either consciously or unconsciously. Such are most of our semi-automatic movements, like walking. For persons of orthodox physiological opinions this last is the main point of interest in the paper.

E. B. HOLT.

HARVARD UNIVERSITY.

JOURNALS AND NEW BOOKS

ZEITSCHRIFT FÜR PSYCHOLOGIE UND PHYSIOLOGIE DER SINNESORGANE. August, 1905, Band 39, Heft 4 u. 5. *Ueber zusammengesetzte Wellenformen* (pp. 241-268): C. STUMPF. - A study of tables of wave-forms which are produced by a combination of two sine curves in the same plane and of the same amplitude and starting-point, when the relative frequency is between 1 and 12. Also minor consideration of curves resulting from non-simultaneous starting-points, or from more than one elementary vibration. Mathematical discussion. Possible applications to the facts of hearing. *Differenztöne und Konsonanz* (pp. 269-283): C. STUMPF. - A partial rejoinder to the work of Krueger, who replaced Helmholtz's theory of overtones in consonance by difference-tones. The principal source of error in Krueger's work is his treatment of the discord. In the discords of the octave and the fifth the difference-tones certainly play an important part. *Bestimmungen über das Mengenverhältniss komplementärer Spektralfarben in Weismischungen* (pp. 284-285): ROSWELL P. ANGIER and WILHELM TRENDLENBURG. - Tables of wave-lengths of complementary colors. *Das Ich im Traume, nebst einer kritischen Beleuchtung der Ich-Kontroverse* (pp. 294-313): CARL MAX GIESSLER. - The nucleus of the Ego in dreams is the familiar feeling of direction or regulation which is opposed to the vague images of subconscious adaptations and to the inexactly localized stimuli which give rise to the non-Ego. *Wird die Lichtempfindlichkeit eines Auges durch gleichzeitige Lichtreizung des anderen Auges verändert?* (pp. 314-326): GÉZA RÉVÉSZ. - The question is answered negatively, no uniform relation appearing. *Beiträge zur Kenntnis von der entoptischen Wahrnehmung der Netzhautgefäße* (pp. 327-331): ROBERT STIGLER. - If, with both eyes closed and directed towards a source of light, the lower eyelid is depressed so as to admit light into the eye through the lower segment of the pupil, the shadows of the retinal blood-vessels can be clearly seen. Methods of observing other entoptic phenomena. *Eine neue subjektive Gesichterscheinung* (pp. 332-340): ROBERT STIGLER. *Literaturbericht.*

ZEITSCHRIFT FÜR PSYCHOLOGIE UND PHYSIOLOGIE DER SINNESORGANE. October, 1905, Band 40, Heft 1 u. 2. *Ueber Annahmen* (pp. 1-54): A. MARTY. - A critique of Meinong's theory of *Annahme* or 'supposition' as an ultimate mental function intermediate between cognition and belief (*Urteil*), the classification being based on Brentano's principle of the manner in which consciousness refers to an

object. Meinong's arguments, based chiefly on negative judgments, are analyzed in detail, and the hypothesis of a special class of suppositions is held to be unnecessary. *Zur Frage über den zeitlichen Verlauf des Gedächtnisbildes für verschiedene Sinnesreize* (pp. 55-73): GISELA ALEXANDER-SCHÄFER. - A comparative study of the course of the memory-image with visual, auditory and tactual stimuli. Memory of time-intervals with auditory stimuli, under three conditions of experimentation, is decidedly better than with visual and tactual stimuli. The reactions in general tended to become quicker in the course of an experiment, especially with auditory stimuli. The reproduction of intervals with tactual stimuli very variable. *Ueber den Einfluss der Blickrichtung auf die Gestalt des Himmelgewölbes* (pp. 74-101): ALOYS MÜLLER. - Criticism of Reimann's and Deichmüller's results and methods. Especially, Reimann's accepted value of 22° for the zenith-horizon angle is held to be wrong. It is nearer 40° . Measurement of illusion due to direction of regard as the chief factor in the illusion. *Literaturbericht*.

REVISTA FILOSOFICA. May-June, 1905. *L'influenza della matematica sulla teoria della conoscenza ecc.* (pp. 293-323): G. VAILATI. - A review of Descartes, Malebranche, Pascal, Hobbes, Locke and Leibniz exhibits an increasing disposition to rest the validity of knowledge on the validity of deduction from axioms, and at the same time a growing sense that such axioms must not be arbitrary definitions. The investigation of the nature of axioms thus becomes important with reference to the problem whether they in turn are subject to demonstration. *La fine del positivismo* (pp. 324-355): B. VARISCO. - The title is ironical and the article is a somewhat polemical defense of the author's type of positivism, which consists in 'assuming science as point of departure, datum and criterion of philosophical investigation.' Varisco means by science 'the totality of certain cognitions, including mathematics and natural science.' Varisco protests equally against the claim to substitute science for philosophy or philosophy for science, and against the proposition (Croce) that 'the methods of natural science and philosophy have nothing in common.' Science holds such a central position in modern life that no philosopher can ignore it. The appreciation of existing science for which Varisco contends has been, he says, characteristic of all philosophers of any authority. *Tertulliano e la filosofia pagana* (pp. 356-376): G. BONFIGLIOLI. - Tertullian has been unjustly regarded as hostile to philosophy *per se*. His hatred was really for the Gnostics, and as these based their theories on Greek philosophy, he denounced the latter for the aid it rendered to the former. Tertullian was a learned man and was forced into the philosophical defense of Christian doctrine, and here he is much indebted to the Stoics and particularly to Seneca. *Rassegna Bibliografica. Notizie e Pubblicazioni. Il V.° Congresso Internazionale di Psicologia.*

Dilthey, Wilhelm. *Das Erlebnis und die Dichtung, Lessing, Goethe, Novalis, Hölderlin.* Leipzig: Teubner. 1906. Pp. 405.

Dühring, E. *Der Ersatz der Religion durch Vollkommeneres.* Leipzig: Theod. Thomas. 1906. Pp. viii + 239.

NOTES AND NEWS

THE following observations occur in *Nature*, in the course of a review of 'Biometrika,' Vol. IV., Parts 1 and 2: "It is not a raid, but a victorious invasion, that Professor Karl Pierson and his school have made into the realms of anthropology, with the result that all that part of it which deals with men in the mass becomes an annex of the mathematician. The invasion occurred at a most opportune time; great collections of data which had been accumulated by the anthropologist threatened to bury him, for he had neither the method nor the appliances for welding them into a composite whole. Especially was this the case with the endless measurements of brain-weights obtained most laboriously by the anatomist and pathologist; they urgently required an application of the 'mathematical science of statistics.' Hence the series of articles which occupy the greater part of a number of 'Biometrika' published a few months ago are particularly welcome; they lay a foundation for an exact knowledge of this subject. . . . Looking widely at the labors of the biometricians on human brain-weights, they appear to the writer, who views them as an anatomist rather than a mathematician, to have accomplished three things:—They have fixed accurately the mean brain-weights for five subraces of Europeans, and shown that mean brain-weight is a racial character; they have estimated by a definite standard the degree to which the brain varies in size and weight according to the individual, the sex and the race; they have worked out the extent to which various features of the head and body are correlated with the weight of the brain, and expressed them in definite, permanent terms. They have laid a sound foundation for future statistical work on the subject, and yet, even at the risk of appearing ungracious, it is the writer's opinion that the full explanation of the relationship which exists between intelligence, brain-weight and other characters is more likely to be discovered by those who investigate the individual than by those who study the mass."

DR. JAMES H. HYSLOP, of New York City, has been offered the secretaryship of the American branch of the Society for Psychical Research, vacant by the death of Dr. Richard Hodgson.

DR. L. FROBENIUS, the well-known German ethnologist, has undertaken an expedition to the region of the Kasai to study the native tribes of that part of Africa.

PROFESSOR RHYS DAVIS, secretary of the Royal Asiatic Society, has been appointed professor of comparative religions at Manchester University.

PROFESSOR WILLIAM JAMES, of Harvard, is now lecturing at Stanford University, where he will remain until June.

DR. MAX HEINZE, professor of philosophy at Leipzig, celebrated his seventieth birthday on December 13.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

IS ABSOLUTE IDEALISM SOLIPSISTIC?

THE possibility of solipsism and its consequences is one of many important philosophic questions which after long and undue neglect seem now at length to be attracting attention. The question of solipsism in its various aspects has a most vital bearing on the ultimate problems of metaphysics. It is easy to see that every idealistic way of interpreting experience can not honestly avoid an explicit and exhaustive discussion of its relations to solipsism. For every approach to idealism is so closely beset on either side by the precipices of solipsism that every step has to be careful, and a false step must at once be fatal. The course of realistic philosophies, no doubt, is in this respect less dangerous; but they, too, are interested in the problem. They have a direct interest in precipitating all idealisms into solipsism. They tend, however, to treat it too lightly as a *reductio ad absurdum*, without sufficiently explaining why. Its absurdity appears to be regarded as practical rather than as theoretical, but even so the instinctive feeling that solipsism 'won't do' should be elaborated into a conclusive proof that it must of necessity lead to impracticable consequences. Lastly, as a final proof of the prevalent vagueness of philosophic thought on this subject, it may be mentioned that it has even been debated whether radical empiricism is not solipsistic.¹

It would seem, therefore, decidedly opportune to inquire further into the philosophic affinities of solipsism, and more particularly into its unexplored relations to absolute idealism. For that form of idealism has hitherto escaped suspicion by reason of the loudness of its protestations against solipsism. But such excessive protests are themselves suspicious, and it should not be surprising to find that whether or not solipsism is a bad thing and an untenable, whether or not other idealisms can escape from it, absolute idealism, at all events, contains implications which reduce it to a choice between solipsism and suicide.

¹ See this JOURNAL, Vol. II., No. 5 and Vol. II., No. 9.

But though the inference from absolute idealism to solipsism seems unavoidable, it would be affectation to pretend that it involves no difficulties. I do not count among these the fact that it will probably be exceedingly unpalatable to absolute idealists, and may even compel them to temper their denunciations of subjective idealism. For, after all, they are men (by their own confession) accustomed to follow truth wheresoever she flits, and to sacrifice their personal feelings. But there does seem to arise a deplorable difficulty about bringing into accord the absolute's point of view with our own.

For the absolute, solipsism is true and forms a standpoint safe, convenient and irrefragable. But for us there arises an antinomy. We have on the one hand to admit that solipsism is absolute truth, seeing that the standpoint of the absolute is absolute truth, and that our imperfect human truth is relative to this standard. If, therefore, solipsism is true *sub specie absoluti*, and we can know it to be so, we ought to think it so. We ought, that is, to think it true that 'I am all that is.' The absolute has proved it. And not only for itself, but equally for any other 'I.' For regarded as a function to which all experience is related, no 'I' differs from any other. Any 'I,' therefore, may claim to profit by the truth of solipsism. It will be awkward, no doubt, at first to have to conceive a plurality of solipsists, each claiming to be the sole and sufficient reason for the existence of everything—but I suppose we might get used to that. It seems, however, a more serious implication that each of them, if his claim were admitted, would render superfluous the assumption of an absolute knower beyond himself. Instead of being absorbed in the absolute, as heretofore, each individual solipsist would swallow up the absolute. This consequence may seem bizarre, but does it not follow from the premises?

The same conclusion follows also in another way. The absolute *ex hypothesi* is and owns each 'private self.' And the absolute is a solipsist. This feature, therefore, of the truth must be reflected in each private self. They must all be solipsists. But this is merely the truth of solipsism looked at from the standpoint of the private self. It must claim to be all because the absolute is all and it is the absolute as alone the absolute can be known. The absorption of the absolute and the individual thus is mutual, because it is merely the same truth of their community of substance differently viewed.

On the other hand, it seems most unfortunate that in practice we all negate the truth of solipsism, and, absolute or no, must continue so to do. Even if the impracticability of solipsism had been exaggerated, and philosophy had been too hasty in assuming this, the working assumptions of ordinary life would be rendered ridicu-

lous, and our feelings would be hurt, if solipsism were true. It may be said, however, that the practical absurdity and inconvenience of a theory is no argument against it, at least in the eyes of intellectualism.

But even waiving this, does it not remain an intellectual difficulty that we have ourselves destroyed the path that led from idealism to the absolute? The absolute was reached (rightly or wrongly) as a way of avoiding the solipsistic interpretation of experience, which it was feared idealism might otherwise entail. It now turns out that the absolute itself insists on the truth of solipsism. And yet if solipsism is true, there is no reason at all for transcending the individual experience of each solipsist! It would seem, therefore, that we can not admit the truth of solipsism without ruining our absolute, nor admit our absolute without admitting the truth of solipsism. We are eternally condemned, therefore, *either* to labor under an illusion, *viz.*, that that is false which is really true, and which we really know to be true though we can not treat it as true without leaving our only standpoint, the human, *or* to reject the very source and standard of truth itself.

In conclusion, I can only very briefly indicate what seems to me to be a way by which absolute idealism can escape these difficulties, even though it may perhaps lead to further troubles. Of course, from the standpoint of absolute idealism the truth of solipsism is only valid if the absolute is assumed to be conscious. We can, therefore, avoid the fatal admission by assuming that it is not. The absolute, that is, is unconscious mind, as von Hartmann long ago contended. But what is unconscious mind? The inherent weakness of the 'proof' of absolute idealism lies in its proceeding from the finite human mind, which we know, to an 'infinite' non-human mind very imperfectly analogous to it, and (apparently) incapable of being known by us. This transition becomes more and more hazardous the further we depart from the analogy with human minds. It may fairly be disputed, therefore, whether there is any sense in calling an unconscious mind a mind at all. But if the unconscious absolute ceases to be conceived as mind, what becomes of the idealistic side of absolutism? Among the absolutists many, no doubt, would be quite willing (under pressure) to move towards the conclusions thus outlined; but would not this involve a final breach with their theological allies, to whom the chief attraction of absolute idealism has always been that it appeared to provide for a 'spiritual' view of existence? But possibly neither philosophy nor theology would suffer irreparable loss by the self-elimination of absolute idealism.

F. C. S. SCHILLER.

CORPUS CHRISTI COLLEGE, OXFORD.

THE INTERPRETATION OF A SYSTEM FROM THE POINT OF VIEW OF DEVELOPMENTAL PSYCHOLOGY

WE may assume two attitudes towards the works of men; we may interpret them, or, going a step farther, estimate them according to our own or the artist's ideal. The one is the function of the historian, the other the function of the critic who is to educate men to do better next time. You interpret the Zeus of Phidias, Dante's *Divine Comedy*, or Wagner's *Parsifal*. You apply your criticisms to works that pretend to contribute to modern progress, as, for instance, a play by Maeterlinck, a new cure, or a new system of philosophy.

Sometimes, however, the very latest systems defy the critic; he may adjudge them stillborn because they do not conform to his standard: nevertheless they will prove very much alive. Buechner's '*Force and Matter*' was in its time the gospel of many thousands. Haeckel's '*Riddle of the Universe*' was not swept into oblivion by a flood of most expert criticism. Of these two I was vividly reminded by Mr. Franklin's '*Socialization of Humanity*.'¹ All three are the work of amateurs in philosophy, and have been or are still satisfying the demands of a large class of people for a systematic arrangement of experience. The most profitable thing, then, seems to be an attempt at interpretation. The more so because the works of the amateur in their unguarded boldness of reasoning offer splendid opportunities for trapping and snap-shooting the philosophizing mind when it transforms by secret processes the raw material of experience into the finished product of a system of metaphysics.

Now if science is first of all an ever-increasing minuteness of description by differentiation, if it is this to-day from the point of view of evolution, history of philosophy will not fulfill this modern requirement unless it describes philosophizing man in his evolutionary stages. The amateur philosopher, then, if I may use the terms of anthropogeny, represents the still extant, though yet unappreciated, link between the expert of to-day, on the one side, and the layman who has ever reasoned and is still reasoning from analogy to systems of anthropomorphic imagery, on the other. The amateur employs the abstract language of the former, but, neither grasping the difficulty of his problems nor familiar with the extent of their solution, reveals by the recklessness of his reasoning the

¹ '*The Socialization of Humanity*.' An analysis and synthesis of the phenomena of nature, life and society through the law of repetition. A system of monistic philosophy, by Chas. Kendall Franklin. Chicago: Chas. H. Kerr & Co., 1904. Pp. viii + 477.

personal equation almost as clearly as the layman manifests his will to believe without hiding behind clever argumentation. Mr. Franklin appears to be an amateur in philosophy. Let us see whether he lays bare some of the hidden ways of the philosophizing mind.

He says (187) the popular view of our situation was correctly stated by a laboring man when the author was a child of seven; he still remembers the striking words: "It is live hard, work hard, die hard, and go to hell at last!" He himself seems still to hold a similar view; our every-day life with its struggle for existence, its panics, its poverty, its insecurity, its wars, is in his opinion little better than savagery (186). The church is said to be the cause of all this misery; her theological conception of the universe prevents man from improving this earthly life. The bits of description strewn over more than four hundred pages, and some information received in answer to my questionnaire concerning the natural history of the thinker, make me infer that the church here denotes the conception and political organization of Christianity against which Voltaire declaimed his '*Écrasez l'infame*,' against which the German Social Democracy thundered her ban up to the year 1885, and which the materialist thinkers and politically interested scientists of Europe about 1860 feared and hated as the staunch supporter of all reactionary policies. Witness, as the last survivals of that metaphysical mood, Haeckel in his earlier philosophical writings, Renan in the preface to his '*Souvenirs*' and still to-day Bertholet in his last volume on '*Science et Libre Pensée*.' Whence, however, so much bitterness and misjudgment in our author, especially here in America, which has never known the political contrast between a conservative majority within the state church and the followers of liberalism?

When Franklin was about thirteen, one day coming home from work with an elder companion, he denied the existence of God because he could not reconcile the evil he saw in nature and society with the idea of an all-powerful God; and still to-day he thinks the argument from injustice most convincing and indisputable.² To mention a greater name, J. S. Mill thought so too, and never ceased to think so even when in later life he had to accept an evil and a good God. As regards our philosopher, two causes seem to have contributed to making permanent the sway of this argument. The first is his being struck by life's misery too hard in his boyhood days. When still an immature boy of eleven he was forced to quit school and earn a living. Any drudgery will be painful to a boy of that age and interfere with his smooth development from the self-centered boy to the society-centered adolescent. The boy has social instinct

² Chap. XVI., 'The God and Immortality Hypothesis.'

enough to respect the group of boys to which he belongs. The only demand he makes upon that group is the demand for a square deal; justice or, better, equality is the supreme law of his life. Any community, small or large, be it even God's, in which a boy must work more than he is able or in which man suffers without good reason, appears to the boy as an unjust organization. However deeply religious the child may have been, the boy rebels against an unjust God like the primitive man who punishes his idols for neglect or misdemeanor; the more so because for the first time conscious of his power to handle a few abstract terms, he judges all things, mercilessly applying the Procrustean bed of his narrow system of thought.

The second cause is a low degree of the teleological vision in the adolescence of our philosopher. When at seventeen he became 'thoughtful about life, what it meant and what his duty was,' he was forced during a Methodist revival to surrender his scepticism and for a time acknowledge the truth of orthodox Christianity. He, however, commenced at once to study the Bible, and the more he studied it the less he believed in it, without having yet looked into the writings of men like Conybear, M. J. Savage, W. H. Mallock and Tom Paine. If I may state in a few words what other individual analyses shall bring out more fully, this continued critical attitude of the adolescent philosopher means to me that the five features of the teleological vision—the emotion of optimism, the emotion of the unity of the universe, the emotion of one's humble place in a purposeful universe, the communistic emotion of love, and the communistic volition of equality and sacrifice—were not so intensely experienced in his 'first conversion' as to undo his boyhood reasoning by opening a view into a vaster and more purposeful universe than the boy had ever known. The several individual purposes of this spiritual world may be hidden from our vision, but appear as firmly established as the whole mental experience which announces to the boy the advent of his adolescence. Thus Carlyle ('Sartor Resartus'), although for ten years rather believing in the Devil and a society subject to him and hostile to the struggling youth, finally, in his twenty-fourth year, had his 'conversion' or 'fire-baptism' on Leith walk and realized the larger spiritual world of the German idealists. Franklin himself seems to think that his having had no particular religious training determined the light transitory character of his first 'conversion.' Herbert Spencer rather felt the other way, that his mental make-up would never have responded to any religious training, however judiciously applied. Leaving aside Mill's case as one-sided over-feeding and artificial deformation of the mind, both may be right, representing different species of mental constitution, especially so because our author now,

in the maturity of his manhood, knows, like any true positivist, the ecstasies of religion.

But whatever have been the causes, the boyhood reasoning from the analogy of tribal equality to man's place in the universe has been firmly fixed once for all. So the author's preachment on man as 'a being unfavored, unfriended by the Infinite' (4) still reveals a metaphysical mood that since his boyhood feels, as it were, the world to be split into two hostile camps. This mood manifesting itself from time to time in emotions of a dualistic view of life appears to be an especially common, though transitory, disease of the adolescent, a disease which results from his struggle to adapt himself to life under the new stimulus of his ideals. However, it may also become chronic or at least permanently affect the intellectual life of the mature man; it is then accompanied by, or evident in, a tendency to antithetical reasoning which leaves the affected individual unaware of the relativity of values and knowledge, and prevents him in many cases from conceiving impartial judgments. Witness Saint Paul and Augustine, or Tolstoy and Carlyle. Tolstoy was not able to adapt himself for any length of time to the life of the upper classes of Russian society, because it was not suited to his spiritual nature; therefore he began to hate and to reject not only that life, but also western civilization represented by it, as altogether immoral, and to love and to believe in the life of the peasant and its spiritual possibilities. Carlyle struggled for ten years with what he called the materialism and atheism of Edinburgh society; it did not satisfy his metaphysical and spiritual needs and, worst of all, it did not seem to have a place for him. When the final unification of his mind started in with reaching the 'Center of Indifference,' he had grown the antithetical thinker and moralizing critic which he remained to the end. An almost perfect record of such growth has been written by a master hand in 'Sartor Resartus,' especially in the 'Sorrows of Teufelsdrökh' and the chapters following. A similar struggle seems to resound in page 246 of Mr. Franklin's book, where the author tells us that religion is the joy of man's life. When a youth he desires to do something for the betterment of the race, being by nature a reformer. He is intoxicated with his dream. But he attempts to do things and fails. His enthusiasm dies out, and at thirty all the dreams of his youth disappear and his ideals are dead. To venture a psychological interpretation, at thirty Mr. Franklin had completed the critical period of adolescence which, in his case, at first modified, later on destroyed, the metaphysical system taught to the child and the boy by his surroundings during the years of mental dependence. He must have been for years without faith in any satisfactory order of the universe. When at twenty-two the

constructive period of his adolescence set in, overlapping the critical one, it took him yet at least eight years to conceive the central idea of his system around which his metaphysical thoughts might crystallize into unity. These eight years of his life without spiritual unity and support may easily have worn out the ideal will for a time.

However, most people do not take up the work of their manhood without any faith. So it is only natural that, as I am told, the positive beliefs of his manhood came to our thinker between his thirtieth and his fortieth year. It must have been at thirty or shortly thereafter that he 'experienced the profoundest surprise' in learning God to be an allegory only for tribe or nation or humanity (249). With this equation he had conceived the central ideal of his system and his practical philosophy: humanity the final cause of the individual's life; this life to be socialized, that is, to be lived in complete devotion to humanity.

This constructive reasoning of his thirties Franklin has called his third conversion—his second conversion had invaded consciousness at eighteen in the form of a moonlight illumination that told him he was then free from the orthodox conception of the fall of man, the atonement and hell. The happiness resulting from the third conversion is said to have been much more intense than that accompanying the first two. This statement agrees very well with the positive beliefs gained by the third which are so necessary to a healthy life; his manhood reasoning had then been completed in a way satisfactory to the individual.

The method, however, employed in it still bears the marks of the antithetical effect upon his reasoning of the metaphysical struggle of his youth. He reasons thus: the hideousness of modern civilization with its poverty, its struggle for existence, its wars, is due to the inefficiency of Christianity (177). The religion of the church is chiefly superstition, fanaticism, bigotry, hypocrisy (333). Christianity does not recognize that governments may do wrong (361). Society, owing to its traditional theology, makes no effort to remedy the social tragedies (367). The thought-stopping answers of theology have stultified man in his investigations (261). Religion is taken advantage of by designing individuals (127). Hypocrisy is the philosophy of the leaders of men to-day as it has been in all past ages in transitional periods, as from mythology to theology (144). The race has ever been the victim of its great individuals, nobilities, priesthoods, professions (151). It is the avowed object of college training to hold persons in their childhood beliefs instead of making them original thinkers (183). Every revolutionizing genius and scientist has suffered as the martyr of his cause (168). And last, not least, Christianity does not fit the individual's acute intellect

(338). In short, the Christian church stands for a theory of things which considers man to be a slave to an imaginary God and his viceroyants and minions here on earth, and existence to be a fixed condition of servitude, instead of a glorious career of development. It is either Rome or reason, as Cardinal Newman said (194). The author has chosen reason; for him science, the work of man's reason, has taken the place of our effete theology.

Reason apparently denotes with Franklin something that will assist in realizing the ideals the youth dreamed of, the betterment of the race. Reason, highly appreciated in the matter-of-fact attitude of manhood, leads to a rational or scientific conception of the universe and permits of conceiving a rational system of living (6). This scientific knowledge begins with matter and energy, and ends by describing all nature in their terms. While the scientist of today will be glad to reduce all knowledge to mathematical equations, Mr. Franklin seems to hold the fond hope of the eighteenth century that it will be possible to mechanize science; his enthusiasm, not sobered by either epistemology or even an amateur philosopher like Du-Bois-Reymond, carries him away to the assertion that even the ultimate secrets of the universe are within the limits of our investigation (7); life will not be a mystery but a science (256).

Empedocles would have satisfied his demand for light on the process of knowing by his answer: *γὰρ ὁ μὲν γὰρ γὰρ ὁπῶπαμεν* (we know the like by the like). Knowing meant to the Greek thinker (if I understand it at all) nothing less than to know as much of a thing as you may know of yourself by introspection; his way and his theory of knowing had not yet outgrown the anthropomorphizing attitude of primitive man. The same method of knowing is used by Mr. Franklin when he rises against the scientists who do not admit that the internal vibrations registered in the nervous system of animals are identical with the external vibrations of the environment. From his point of view they must be identical or else we would have unlike knowing like for the first time in all nature (44). If the mind is not the residual representations of external energies so as to be identical with it, then it is inexplicable, then the universe is unknowable, then science is but a dream, and man the sorry dupe of his own nature. Such is not the case (46). He is certainly not a pragmatist; he is an enthusiastic rationalist; he will not submit to the relativity of human knowledge, but believes in our ability to arrive at absolute knowledge; and since he unknowingly reasons from the analogy of his own inner aspect to the life of the things about him, he insists on knowing the like by the like as the only method that satisfies 'his longings for absolute knowledge' (80).

On the other hand, Mr. Franklin has given up in despair the

task of forming a concept of a purposeful universe out of the apparent chaos and realizes that man is a being unfriended by the Infinite (4); his teleological vision lacking in intensity, he has resigned himself to that knowledge that describes nature in terms of matter and energy. But since these external phenomena are silently understood to have an inner aspect according to the above principle of knowing the like by the like, the thinker may easily take mechanical energies to be identical with mind as their residua in the brain; nor is the inference to be wondered at that we shall finally know what we are and what everything else is in terms of our own being (256); then we shall also know what matter is because we know what emotions and ideas are (85); thus the gap between mind and matter is spanned, and the whence, whither and why of humanity determined (129).

The hidden anthropomorphism comes out more clearly in his chapter on 'Aspects of Scientific Morality,' where the various forms of the will are given as chemical affinity, appetite, desire, will, love, religion (348). Mr. Franklin illustrates his way of reasoning by referring to Bacon's 'Advancement of Learning.'³ However, we need not go back into the past. This anthropomorphic stage of scientific reasoning with its belief in absolute knowledge and its inability to perceive the outer as well as the inner aspect of this world as psychic realities may still be studied in life. Professor E. Haeckel, of Jena, regarded in 1892⁴ all matter as endowed with feeling and the power of motion, and, as a true rationalist demanding an explanation of chemical affinity, accepted the Empedoclean supposition that the molecules or atoms feel each other. To-day his hylonism, or hylozoism, is, according to 'The Wonders of Life,' meant to express 'the fact that all substance has two fundamental attributes; as matter it occupies space, and as force or energy it is endowed with sensation.' In the same way, Professor W. von Bechterev⁵ needs for his scientific reasoning a psyche (innere Verarbeitung äusserer Rückwirkungen) as the inner aspect of the most simple living beings, but he more cautiously arrests his anthropomorphizing bent where the series of living substances ends. Neither do I think that Herbert Spencer in making the equation, ether = consciousness, passed beyond this hylozoism; and Diogenes, of Apollonia, generalizing primitive thought, for instance, that of the ancient Hebrew, endowed all the air with an inner aspect.

However, before we go on with the analysis of the philosopher in hand, we must state here in justice to him that quitting the common

³ Book IV., Chap. 3.

⁴ *Monist*, III., p. 234.

⁵ *Journal für Psychologie u. Neurologie*, V., p. 211.

school when still a boy of eleven, he has not had the opportunity for, and guidance in, developing so rich a system of concepts as one who attends school until he enters upon a profession at about twenty-five. Thus there was a limited range of concepts and a limited capacity for receiving new ones at his disposal while he was constructing a vast metaphysical system. This limitation of intellectual content accounts for the fact that our rationalist is, on the one hand, so easily satisfied with anthropomorphic ways of reasoning, though determined on a rigorous mechanization of all science, and, on the other hand, manifests a certain unwillingness to stand the 'showers of scientific technicalities' and an inability to understand the intricacies of modern science. For instance, he thinks that the various definitions of society proposed by sociologists are due to a capricious desire to be original rather than to express the facts in the case (373). It is no wonder that at the age of eighteen he was at first not able to understand Mallock's 'Is Life Worth Living?' and that he read Comte's 'Positive Philosophy' in Martineau's abbreviation 'many times' since his twenty-second year before he understood his 'greatest philosopher.'

With such mental make-up, holding fast to the true rationalist method that he had followed since his boyhood days, he looked out upon the universe. In the eyes of the anthropomorphizing thinker, the universe is a being the only business of which is to economically expend energy, and, like a householder or economist, he assumes the utilitarian attitude of mind, asking 'what for?' and 'to whose benefit?' The answer is not favorable to that being, because the conception of an economical expenditure of energy does very well when applied to living beings that succeed best in preserving life by greatest economy along with the vigorous play of their biological functions, but can never be deduced from the life of a universe which as a whole is not accessible to scientific analysis. Nature is the most wasteful organization (12). Its seemingly intelligent arrangement does not amount to much when we estimate all of the waste. If man had the power, he could make improvements in the solar system, arrange to better advantage the rainfall upon the earth and economize the sunlight. Man might plan such wonderful things because the energies of nature in their fortuitous combinations have resulted in a new world, the life of the individual controlled by the conscious or subconscious mind; the test for this mind is order resulting from an ever more economical expenditure of energy that goes to preserve the individual and the race (96). Thus, according to Mr. Franklin, purposive mind appears a stranger in a strange world which has no purpose. Only in a few places we may come across a larger vision that recalls Hegel (whom the author never felt inclined to study);

for instance, where Franklin sums up the universal process by saying that the individual comprises within himself all of nature and all of society by being the object in which nature returns upon itself in self-consciousness (161).

In general, however, and consistent with the whole system, the narrower vision prevails. A part of the universe has been surrendered as inaccessible to the purposive interpretation of the ideal will or teleological vision. The remainder is not, as one should infer from his biological test for mind consisting in economical expenditure of energy, the whole animate world, to which modern scientists, in contrast with eighteenth-century rationalism, feel inclined to extend the fellowship of kin; the remainder is humanity only, that part of the animate world which is capable of planning a greater perfection of its life and conceiving of the socialization of humanity as its final cause and chief concern. Since Mr. Franklin has learned to his joy that society is the author and perfecter of our being, he demands that all prayers, all songs, all praises, all service, be inspired by humanity and directed to humanity (270), 'in which we live and move and have our being.'

Thus religion is the very climax of mental life, because it is the emotion of race-protection (95), because the most exquisite ecstasy possible to a human being comes from the performance of his social functions (155). Without religion no socialization! Only the supreme ecstasy of religion will overcome selfish individualism, the immediate cause of all social misery (251). Therefore one should make religion the basis in our system of education (105), so that no scholar may leave school without the vision of humanity. On this basis, the educator is to consciously and consistently build up his educational practice after the demands of biology and sociology. He should teach what nature is and how to live in it, what society is and how to adjust one's self to it; he should teach these subjects, even sociology, by the experimental methods (181).

After this practical philosophy had been worked out, or at least conceived in its main features, Mr. Franklin seems to have felt the need of unifying his ideas about life into one homogeneous system, or, as he says, 'to interpret everything in the terms of some one thing.' When at the age of twenty-two he decided to construct his own system of philosophy it was with him a matter-of-course that he reject the conception of God as unsuited to guide to ultimate terms, because the inner aspect was, for lack of vision, not the predominant factor of his experience. As we saw above, he accepted as suited for the purpose the terms of the space or outer aspect. He found it easier to arrive at an ultimate substance and an ultimate law than his master. Comte, too well informed to believe in the

mechanization of science, yet gifted with too narrow a vision to look at ultimate questions from the psychical point of view—Comte in the 'Introduction' holds out no hope that he might be able to reduce the vast variety of experience as proceeding from a single principle and as subjected to a single law.

Mr. Franklin then began, quite up to date, with energy as the ultimate concept, as if he were familiar with Ostwald's speculations on matter and followed him in not seeing the heterogeneity and reciprocity of matter and energy, that is, that neither term can do without the other nor take the place of the other. Energy, we are further told, manifests itself as gravitant and radiant. Gravitant energy produces the forms of matter, radiant energy the conditions of matter. The latter is 'expended' (1) by inanimate nature, (2) by the self-interested individual under the direction of the intellect (fourth law of motion), (3) by the same under the guidance of the emotional 'moral sense' (fifth law of motion), and (4) by the same according to the 'social sense' or scientific knowledge (sixth law of motion); each form more and more approaching the perfectly economical method of the last. Gravitant or internal energy manifests itself (1) in nature as chemical affinity, (2) as the instinct of self-preservation in the animate world, (3) as sexual love in man, and (4) as religion, holding men together in a social organization. From the fact that both kinds of energy behave everywhere and at all times in the same way, the author deduced and discovered, after seventeen years of thought, the law of external and internal repetition as the ultimate law. It seems to mean that there are uniformities of nature; nature follows up the same causes with the same effects: Mr. Franklin wants to have here subsumed Tarde's and Baldwin's laws of imitation. Only the varied combination of the two kinds of energy produce change, evolution and progress.

So much for the general character and growth of this 'monistic system of philosophy,' which is as much a monism as Professor Haeckel's or any other hylozoism.

If I were finally asked to give an opinion on the practical educative value of the work that embodies the system, I should point out these three of its features. First, it is all through a passionate plea for the ever more thorough application of science to the functions of individual and social life: let us eat and drink scientifically, let us work and rest scientifically, let us engender offspring scientifically, let us organize society scientifically. What the author means may, in part, I think, be well illustrated by the exceedingly scientific conduct of the Japanese commissariat and medical service during the late war. I wish, indeed, some academy of sciences would compile a moral code, something parallel to the civil code of the courts; a

code which prescribes rules of conduct regarding the various functions of the individual and society; which could be revised at stated intervals like the official dictionary of the French Academy; a code which would infinitely assist the anxious inquirer to live a healthier, more useful and happier life and thus prevent many evils arising from the ignorance of those who are willing to do better.

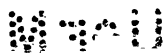
Second, the book forces upon us the conclusion that the very application of science to the problems of social life will contribute to lighten the social fabric in order to preserve and increase the life of the social body and the individuals composing it. Mr. Franklin is not a socialist of this or that brand; well, he is as much of a socialist as we all are who want to consciously and scientifically guide the evolution of society to forms of organization in which the individual reaches his highest development and is thereby enabled to serve society in the most efficient way. Mr. Franklin, though better appreciating the function of society than Herbert Spencer, is still at heart an Anglo-Saxon individualist, he is not kin to the German socialist, because with Franklin the socialization of humanity is not an end in itself, but a means to create conditions favorable to perfect the life of the individual. The German socialist represents a racial admixture to the Teuton stock which is not made for an individualistic society; his vision of the state is not so differentiated as to include the most intense individualization as a means of increasing the life of the body politic.

And third, education ought to be more rigorously planned and practiced from the biological point of view of efficiency to preserve and increase life; and since skill is developed and efficiency attained by practice or experiment only, Mr. Franklin wants to have the laboratory methods extended even to the subject of sociology. I suppose he has in mind something like the 'school city' political organizations of high school pupils tried successfully in several larger cities of the east and middle west and resorted to already by the great educators and character-builders of eighteenth-century rationalism.

This is his sermon, and I am sure a large and congenial congregation is ready to listen to its preacher.

EDWIN TAUSCH.

OHIO UNIVERSITY.



DISCUSSION

A REPLY TO DR. MINER

MY recent review of the *Iowa Studies in Psychology* has called forth a rejoinder from Dr. Miner. It will be remembered that Dr. Miner's paper in the *Studies* sought, in part, to determine whether 'the loss of sight in a blind person is compensated for by greater keenness in the other senses.' Such an investigation could, of course, be accomplished only by first making an accurate and thorough determination of the (congenitally blind) patient's sensitivity in the various sense departments, and then comparing these results with data similarly obtained from normal subjects. My review pointed out in detail that Dr. Miner's work failed to meet either of these requirements.

The author now replies that his paper is entitled to favorable consideration because the condition of his patient's health prevented 'long-continued experiments,' and because the publication professed to be nothing more than a preliminary report. Dr. Miner seemed to be favored with an unusual opportunity to contribute to the solution of a much-disputed problem. And every psychologist must regret that the complete accomplishment of his purpose was prevented by circumstances over which he had no control. Yet the fact remains that half a loaf is better than no bread. Under the peculiar circumstances of the case, Dr. Miner found himself confronted by two alternatives; either he might make a superficial examination of the whole field, or he might confine his efforts to a thorough investigation of a circumscribed part of the problem. And our criticism would have been forestalled if he had chosen the latter alternative.

It is not clear to me why the fact that a paper is a preliminary report should absolve it from criticism. One is under no compulsion to publish a half-finished product; and the utility of immature publication may well be called in question, particularly in these days of strenuously active production. No doubt there may, in certain cases, be adequate reasons for such a preliminary report. Dr. Miner assures us that his was published in the hope of obtaining suggestions for further work. But—has he forgotten his patient's feeble health? One can not eat one's cake and have it too. Was the patient available for additional experiments, or was she not? If she was, then the excuse given for lack of thoroughness of experimentation is unjustified. If she was not, then the reason assigned for premature publication is idle.

Dr. Miner charges my review with a twofold omission, and with various 'misrepresentations.' As for the omission, it is to be borne in

mind that a review is, in the nature of the case, a brief summary and criticism of a more lengthy publication. Certain omissions must be made; and there may be room for difference of opinion as to what points are to be included and what omitted. A single omission, even if it be twofold as in the present instance, is not of necessity an unpardonable sin. Moreover, if Dr. Miner will look again he will find that his report of an abnormal color sensitivity which I am charged with 'completely overlooking' is not omitted from the review.

I am said to 'misrepresent' the condition of his patient in that I referred to her disorder as 'a cataract.' The affection was not confined to a single eye, and hence I should have said 'cataracts.' But if Dr. Miner will consult the literature he will find that I have abundant authority for the form of expression which I employed. Would he maintain that Ware, Franz and other writers of equal prominence have persistently 'misrepresented' the condition of their patients?

Exception is taken to my criticism that the author dismisses the problem of passive touch with a single short sentence. It is explained that the pith-ball test revealed 'no peculiar sensitivity,' and that 'time was too precious to waste on unnecessary tests.' Truly! But why select the uncertain pith-ball test, rather than employ the much more accurate and much more refined esthesiometer of von Frey? It seemed to the reviewer to be an essential part of the investigation to determine accurately whether the patient's training in the school for the blind had refined the sensitivity of her finger-tips. Hence my criticism of Dr. Miner's treatment of passive touch and of dual impression.

It is further charged that I described the test of active touch as unmeaning, and that my criticism is based upon my misrepresentation of the experiment. Here, again, Dr. Miner is in error; for if he will reread the review he will find that I passed no criticism whatever upon this test, and that I neither misrepresented his experiment nor described it as unmeaning. What I did criticize was *the form in which he expressed his results*. These are not presented in relative terms. And since no normal records are given for comparison, the reader is wholly at a loss to know whether the author's statement means that his patient's sensitivity to active touch was normal, was abnormally acute, or was abnormally obtuse. Hence my criticism: "The stimulus limen of active touch is expressed in terms of the number of sheets of paper through which a fine wire could be felt,—a statement which is unmeaning as it stands, and no normal records are presented for comparison."

Dr. Miner and I are widely at variance as to what constitute the essential features in an investigation of depth perception. He

describes his sole experiment as follows: "Different sized balls were hung at varying distances from her. Using only one eye, she judged them to be at the same distance when one was 15 cm. farther away. But the difference was narrowed down to 6 cm. when both eyes were converged on one ball and then on the other. Her error was thus cut in half by using both eyes together." The description of the conditions under which this determination was made is, as will be seen, exceedingly meager. It seems probable, however, that the experimenter was attempting to test the influence of the primary criteria upon his patient's estimation of distance. Now, it is agreed by all investigators of the visual perception of distance that the primary criteria—whether they be conceived in terms of muscular sensations, or of purely retinal data—are *effective in proportion as the visual object is near the eye*. It is clear then that Dr. Miner's statement is defective in that no mention is made of the distance from the eye at which his test was made. Moreover, in any investigation of the influence of the primary criteria, it is essential that secondary criteria be excluded. Dr. Miner's experiment, as described in his paper, did not provide for the exclusion of change of visual angle nor of other secondary clues to distance. The reviewer noted this defect and suggested that an adequate statement of the conditions would have specified the diameters of 'the different sized balls.' Dr. Miner assures us that the absolute distances and the varying sizes of the balls 'have little bearing upon the characteristic demonstrated, namely, the change in her accuracy.' The reviewer is unable to share this disdain of established facts.

In reporting his tests of tonal discrimination, the author brings forward but a single set of numerical results. "With the tuning forks she distinguished, nine times out of ten, a difference of eight vibrations from the international *a* (435 vibrations)." Since, here again, no data for normal subjects are presented, the reviewer was obliged to turn to the literature for comparative results. It has been established that the normal difference limen for this region of the tonal scale is, after preliminary practice, considerably less than one vibration. Inasmuch, then, as Dr. Miner found that his patient's difference limen was some twentyfold greater than that of the normal subject, and yet in the face of this fact concluded that she possessed a normal sensitivity, the reviewer ventured to suggest that there seemed to be a discrepancy between the author's premise and his conclusion. Dr. Miner replies by introducing new data which he has obtained from normal subjects, and which he finds to bear witness to the normality of his patient. Why were these data not included in the original paper, to which they properly belong? It is just this failure

to present comparative results which has been a chief factor in rendering the publication abortive. Moreover, the fact that the author's determinations of the normal difference limen for tones are twentyfold greater than the normal determinations of the most reliable workers in the field of psychological acoustics shows that there is something radically wrong with Dr. Miner's conditions of practice or of experimentation.

I believe that I have met all of the objections raised against my review. It is unnecessary to add that I stand by my original criticism. Dr. Miner seems to me to have been guilty of an error of judgment in the planning and conduct of his whole investigation. I am convinced, too, that he merits criticism for the imperfect character of his presentation. Whether I am right or wrong in these contentions I can only leave to the competent to decide.

J. W. BAIRD.

JOHNS HOPKINS UNIVERSITY.

REVIEWS AND ABSTRACTS OF LITERATURE

The Philosophy of F. H. Jacobi. ALEXANDER W. CRAWFORD. *Cornell Studies in Philosophy*, No. 6. The Macmillan Co. 1905. Pp. iii + 90.

A new presentation of this philosophy of realism, immediacy, experience and faith is certainly welcome in view of the prominence of these catchwords in contemporary discussion. Not that Jacobi throws any new light upon our controversies, for his thought is ill-defined, but it is interesting to note the form which the reaction against rationalism and sensationalism assumed in his writings. His personality, also, has much in it that is akin to some of the modern leaders of the new thought.

Professor Crawford's monograph is the result of an exhaustive study of his subject and his quotations and references give ample material for the reconstruction of Jacobi's system. His work appears to be a labor of love, and where he errs it is largely due to his desire to give his subject the benefit of the most liberal interpretation possible. This is, indeed, to a certain extent justifiable in the case of men of the Platonic temperament whose contribution is an attitude rather than a system, yet when done it should be done explicitly and clearly. There seems to be, also, a certain looseness in the use of such fundamental terms as realism, idealism and immediate, which makes the author's interpretations misleading. The term realism, especially, seems to irritate him as applied to Jacobi's philosophy because it suggests to him a materialistic interpretation of reality, its colorless epistemological meaning, which is that emphasized by Jacobi himself, being but grudgingly recognized. Certain inconsistencies of statement naturally result from these ambi-

guities but, taken as a whole, the book gives an extremely readable and complete account of this faith philosophy.

Jacobi's starting-point was the primacy of the heart over the head, and his whole philosophy was an attempt to interpret the world in such fashion as would validate life's practical ideals. The particular form of his doctrine was determined by his opposition to the prevailing rationalism of his day, the logical outcome of which he believed to be a Spinozistic pantheism incompatible with individual personality. As against such a conceptual system Jacobi stood for the primacy of life and experience as alone furnishing the reality which must be the correlate and standard of our thinking. But in this experience he discovered other elements than those furnished by sensation. Certain spiritual realities are presented immediately in feeling or reason which have as great a certitude as those of sense. God, as well as the world, is present in our lives, and of His reality we need, and can have, no other proof than that we find Him there. Sense and feeling are thus the coordinate sources of the data upon which all our thinking rests.

It is in the interpretation of the nature of this immediate spiritual intuition that our author's position seems doubtful. Criticizing the present reviewer's assertion that in the act of perception Jacobi makes the mind passive toward its object and that his whole doctrine of knowledge is really an attempt to rid knowledge of the thought element in it, Professor Crawford says, "This would be true only of Jacobi's earlier expositions of perception, when he called it a form of feeling, but it is the contention of this study that his later adoption of the word 'reason' in place of 'feeling' is a recognition, or a restoration, of the thought element in reason or judgment" (p. 47). It might be enough to place alongside of this passage the following: "The real, then, is given in perception rather than in thought or in ratiocination. Perception is real because it gives both thought and being. . . . Conception can not give objectivity; this is found only in perception, where alone actuality is given. In the same way reason (faith), as a form of perception, creates no concepts, builds no system, passes no judgments, but, like the external sense, merely reveals and positively makes known" (p. 59). Jacobi's whole philosophy is built upon this contrast between mediacy and immediacy, between that knowledge which is the result of reflection and subject to proof, and that which is given and not susceptible to proof. That the receptivity of the mind may itself be viewed as a kind of activity does not affect his position that the objects of faith are not known through a process, or that perception and thought are distinct. That such a conception of pure immediacy is not capable of being consistently carried out is no ground for denying that it was actually held. This the author appears to recognize when he says, "If Jacobi's view of immediacy were possible at all, it would render *self-consciousness* impossible. . . . All this Jacobi felt in a way; and only in so far as he got beyond the standpoint of immediacy did he formulate a philosophy at all." Which is only to say that he failed to hold fast to what was his real principle.

The author's discussion of Jacobi's realism is even more uncertain in tenor. He is uneasy at the idea of classing him as a realist and yet is forced to do so, formally at least. His trouble lies in his failure to understand what this realism means in this connection. Jacobi believed that our experience is not a mere train of subjective mental states, sensations and ideas, but that real objects are given us immediately and are the objects to which our thought refers. "In the first and simplest perception there must be the 'I' and the 'thou,' inner consciousness and external object existing together in the soul: both in the same indivisible moment, without before or after, without any operation of the understanding, nay, even without in the slightest degree beginning the production of the concept of cause and effect" (p. 57). Real objects, not ideas, are thus the primary data of knowledge and, though independent of us, given in our experience. They are revealed to us as things beyond us, yet within us. Their being known by us adds nothing to their reality, which is the condition of our accidental knowing of them. And this reality which objects have is not a mere phenomenal reality, such as Kant ascribed to the objects of knowledge, but is a complete noumenal reality, so that our author's assertion that Jacobi is no 'more of a realist than Kant' is hard to understand. It is quite true that the most important, if not ultimately all, realities are for Jacobi of a spiritual nature, subjects rather than substances, yet this is obviously beside the question of the relation of our knowledge to its object. With his insistence upon the ultimate significance of the individual person and the impossibility of turning faith into knowledge, Jacobi would have been the last to accept the monism of the Hegelian idealism. Such a monism was for him always the type of a rational philosophy, but, as such, always the proof that a rational philosophy was inadequate as a formulation of reality. As an upholder of the doctrine of the primacy and independence of spiritual reals, Jacobi must be looked upon as the founder of the realistic opposition to that line of idealists of whom Kant was the first.

NORMAN WILDE.

THE UNIVERSITY OF MINNESOTA.

Mathematical Emancipations. C. J. KEYSER. *Monist*, January, 1906. Pp. 65-83.

The clear and elementary account of the concept of dimensionality which Professor Keyser has given us under the above somewhat mystifying title is especially welcome, inasmuch as writers in our philosophic journals are wont to drag Kantianism into the discussion and so confuse the issue. We regret, however, to find the paper confined, for the most part, to the exposition of mathematical facts, ignoring the work of Poincaré,¹ who has presented essentially the same material and interpreted it with great philosophic insight.

The creation of manifolds by the act of discrimination, says Professor Keyser, is the most primitive manifestation of mind. The dimension-

¹ Cf. especially 'Science et Hypothèse,' Part 2. Paris, 1902.

ality of a manifold, mathematical or otherwise, depends upon the number of independent facts which must be known to distinguish any element of it from all the other elements. But the dimensionality depends in part upon the will of the investigator; the plane is two-dimensional in terms of either points or lines, but if treated as a collection of circles, as is perfectly permissible, it is three-dimensional, since two independent data are required for position and one for size in the case of each element. It is four-dimensional in parabolas, five-dimensional in conics, etc., 'without limit' (p. 75). We can in like manner analyze any configurations of space in many different ways. The mystery of hyperdimensionality vanishes in the simplicity of these considerations, and we see that our preference for the point among possible elements is to be explained through the fact that 'practical man precedes man rational and determines for the latter his rational choices' (p. 77).²

Dimensionalities exceeding three in *points* have a special interest. Such manifolds are created in thought and have genuine conceptual existence (p. 80). Just as we can posit the point manifold which we call a plane, and a point outside of it which we connect by lines with every point of the plane, and so generate a three-dimensional manifold in points, we can also posit a point outside of this manifold and connect it similarly with every point already given, thus obtaining a four-dimensional manifold in points. But, "Is it possible to intuit configurations in a hyperspace of points?" (p. 81). While admitting inability to answer with absolute confidence, Professor Keyser thinks that with practise and acquired skill "the *parts* of a familiar *fourfold configuration* may be made to pass before the eye of intuition in such *swift and effortless* succession that the configuration *seems present as a whole in a single instant*. If the *process and result* are not, properly speaking, *fourfold imagination and fourfold image*, it remains for the psychologist to indicate what is lacking" (p. 82).

A more satisfactory treatment of this problem could have been derived from the study of Poincaré,³ or even from taking Russell's⁴ account of geometry to heart. The geometry with which Professor Keyser deals is pure geometry not yet applied in our world of experience. In pure geometry, the problem of intuiting a space is the problem of holding a complex of logical relations before the mind, and it is certain we can not do this for complex configurations of three- or even two-dimensional point manifolds. In applied geometry, on the other hand, to intuit space as four dimensional would mean to have our experience different from what it is; thus, if the feelings of convergence and accommodation of the eyes, as factors in our perception of depth, varied independently, visual space would be a four-dimensional point manifold; yet while we can state the condition, we can have no idea what the new experience would be like, and so there is no possibility of intuiting our space as four-dimensional

² Cf. Poincaré, *op. cit.*, pp. 67, 91.

³ *Loc. Cit.*

⁴ 'Principles of Mathematics,' Ch. LXIV. Cambridge, 1903.

in this sense. The paper closes with the usual vindication of the study of 'hypergeometries' through esthetic joy in reasoning.

HAROLD CHAPMAN BROWN.

HARVARD UNIVERSITY.

Rôle des sensations internes dans les émotions et dans la perception de la durée. G. R. D'ALLONES. *Revue Philosophique*, December, 1905. Pp. 592-623.

The case is here reported of a woman, fifty-three years of age, uneducated but intelligent, and without any discoverable hereditary taint, who from being naturally of a highly emotional disposition had come, in consequence of sickness and various depleting conditions, to feel, apparently, no emotions at all. The interesting feature of the case is that at the very moment when she declares that she does not feel a certain emotion, she nevertheless shows all the signs of it in their normal intensity. The suspicion, however, that we are dealing here with a 'psychasthenic,' or with the victim of a fixed idea, is not well grounded; there is good reason to believe that her statements about her feelings are true. The author has examined the patient with reference to her sensibility and finds that, while there are no defects such as to cause an appreciable modification of external perception and little perturbation of the motor functions, visceral sensibility is practically abolished and organic sensibility generally profoundly affected. Thus, while tactile sensibility is only lowered, there is complete anesthesia to heat and pain over almost the entire surface of the body. The gustatory sensations are defective; the patient never feels hunger or satiety, thirst rarely, fatigue hardly at all and never the benefit of repose; a sensation serves as a signal when the bladder or rectum is full, but without distress, and the discharge of the function is never attended with the feeling of relief; purgatives cause no colic and no increased sense of need, etc. Castor oil produces nausea, but no feeling of disgust. On one important point the evidence seems defective, namely, as to the sensations accompanying respiration and circulation; but we are assured by the author (p. 614) that the internal reflexes are totally unconscious.

The main inference drawn from these facts coincides with the result previously reached by Sollier,¹ that the essential thing in emotion is the visceral sensibility, and that sensations from 'movements of relation' are only accessory. The author, however, writes from the point of view of the peripheral theory, which Sollier, with his 'cerebral' interpretation of the facts, discards. Whatever the interpretation, the intimate and essential connection of visceral and emotional susceptibility seems to be one of the most certain results of investigation in this field.

Another inference is that we have to distinguish among organic sensations the affective, *i. e.*, visceral and cutaneous painful and thermal, and the non-affective, *i. e.*, sensorial, tactile and external motor.

A further, and important, inference is that we must distinguish emo-

¹ 'Mécanisme des Emotions,' pp. 178 ff.

tions and inclinations. The patient is still capable of 'intellectual' inclinations, she 'fears' without suffering, 'desires' without pleasure or distress. Such inclinations are explained as the residua of previous emotions devoid of their affective nucleus, the internal sensations. They are constituted, it is held, of sensations of external movements, special sense data, memories, ideas, judgments, reasonings, the whole capable of cohesion and systematization and of being externalized, without emotion, in words, mimic movements and acts.

A further peculiarity of the patient is that she has no sense of the lapse of time. This the author also connects with the loss of visceral sensibility, and concludes that the living sense of duration, of the continuity in succession of the daily events, is nothing but visceral sensibility. But as the patient is able at times to distinguish difference in rate of two compared series of beats,—though hardly after the first few strokes, unless the difference is very marked,—he distinguishes visceral duration, which extends only to some few hours, from infinite intellectual time, on the one hand, and from sensori-motor time, which does not extend beyond a few seconds, on the other.

H. N. GARDINER.

SMITH COLLEGE.

Erzeugung kurzdauernder Lichtreize mit Hilfe des Projektionsapparats.

KARL MARBE. *Archiv für die gesammte Physiologie*, Bd. 107, 1905. S. 585.

The author describes an interesting and relatively inexpensive apparatus for giving simultaneous and successive visual stimuli, that admits of a wide range of variation. The main features are a projection apparatus, a rotating disk with motor, a screen with a small window that is opened and closed by an electrical release, and a revolution-counter with electric contacts. This apparatus without the projection lantern or the motor that propels the disk can be had of a Würzburg manufacturer for M. 85. Among the possibilities of this apparatus are the production of a 'Talbot field,' in which the intensity and duration of the light phase and the duration of the dark phase can be very widely varied, and beside it a periodically illuminated field of varying duration and intensity; of two Talbot fields in which a considerable range of conditions may be specified; of a single field in which the duration and intensity of illumination can be varied to almost any extent, etc. The apparatus should be useful in a wide variety of psychological experiments, and it is equally adapted for demonstration work.

E. B. HOLT.

HARVARD UNIVERSITY.

JOURNALS AND NEW BOOKS

ARCHIV FÜR GESCHICHTE DER PHILOSOPHIE. October, 1905, Band 12, Heft 1. *Mechanismus und Teleologie in der Philosophie Lotzes* (pp. 1-98): K. WEIDEL. - That events occur according to universal laws is not learned from experience, says Lotze, but is a presupposition based on the law of identity itself. Organisms are strictly mechanical, and their germs contain no multiplicity of detail to account for future development. The human soul, however, is genuinely active, both in the physical and in the psychical realms, though in accordance with universal laws. The mechanical view of the world requires as a starting-point a definite systematic character, not an accidental or chaotic condition, so that it presumes purpose. Hence it itself points to a rational order, to a systematic unity and to a living absolute. The personality of God, however, is not demonstrable, and the union of mechanism with the moral and esthetic character of the world is a perpetual riddle. The freedom of the will is a fact similar to the original creation of things. What the will originates is, like all else, connected as to its parts under universal laws. Dr. Weidel objects particularly that Lotze contradicts himself in assuming 'soul-substance' and 'will-origination.' The only solution of the relation of mechanism and teleology is through the theory of energy. *Kants Antinomien und Zenons Beweise gegen die Bewegung* (pp. 99-122): R. SALINGER. - The chief problems of Zeno reappear in Kant's antinomies, and the solution of them still waits on the definition of continuity. *Die polnische Philosophie der letzten zehn Jahre, 1894-1904* (pp. 125-147): H. VON STRUVE. - No one philosopher is singled out for special attention. *Die neuesten Erscheinungen. Eingegangene Bücher. Zeitschriften.*

MIND. October, 1905, N. S., No. 56. *Pragmatism vs. Absolutism* (II.) (pp. 441-478): R. F. ALFRED HOERNLÉ. - The central doctrine of pragmatism is the insistence on the purposiveness of our whole mental life. As absolutism errs in separating truth from our acceptance of it, so pragmatism errs in making the latter our sole criterion of truth. The conception of an *Arbeitswelt*, or common life, of which all human activities, theoretical or practical, are but forms, does justice to pragmatism and at the same time corrects its failure to find a unifying element, or whole, to which all manifestations of purpose contribute. *On Denoting* (pp. 479-493): BERTRAND RUSSELL. - The exposition of a confessedly complicated theory by which the author would solve what he regards as the puzzles involved in propositions in which the subject is a nonentity. *Predetermination and Personal Endeavor* (pp. 494-506): W. R. BOYCE GIBSON. - If knowledge means simply knowledge of objects, it stands in direct antithesis to volition; but if knowledge includes knowledge of a developing subject or self, the gulf between will and intellect is bridged. *Is Humanism a Philosophical Advance?* (pp. 507-529): S. H. MELLONE. - "Does humanism in effect explain away intellect into emotion and will?"

Does humanism in effect deny to the object any independence of the subject's will and action on it?" The author shows very convincingly that these difficulties have not been adequately or even frankly dealt with by James and Schiller, and he tells us that "until they have been fully dealt with, humanism leaves us with the same ambiguities on our hands as did the absolute idealism which it claims to replace." *Critical Notices*: A. Meinong, *Untersuchungen zur Gegenstandstheorie und Psychologie*: B. RUSSELL. G. Simmel, *Die Probleme der Geschichtsphilosophie: eine erkenntnistheoretische studie*: D. MORRISON. E. Spranger, *Die Grundlagen der Geschichtswissenschaft: eine erkenntnistheoretisch-psychologische Untersuchung*: D. MORRISON. J. Petzoldt, *Einführung in die Philosophie der reinen Erfahrung*: J. L. M'INTYRE. *New Books. Philosophical Periodicals. Notes*: Lewis Carroll's *Logical Paradox* (E. E. C. JONES). *The Existential Import of Logical Propositions* (H. MACCOLL).

Heymans, G. *Die Gesetze und Elemente des Wissenschaftlichen Denkens*. Zweite verbesserte auflage. Leipzig: Barth. 1905. Pp. x + 421.

Leroy, Eugene-Bernard. *Le langage: Essai sur la psychologie normale et pathologique de cette fonction*. Paris: Felix Alcan. 1905. Pp. 293. 5 fr.

Lotsy, J. P. *Vorlesungen über Deszendenztheorie, Erster Theil*. Jena: Gustav Fischer. 1906. Pp. xii + 384.

Morgan, C. Lloyd. *The Interpretation of Nature*. London: The Macmillan Co. 1905.

Oman, J. Campbell. *The Mystics, Ascetics and Saints of India*. London: T. Fischer Unwin. 1905.

Pauly, August. *Darwinismus und Lamarckismus. Entwurf einer psychophysischen Teleologie*. Munich: Ernst Reinhardt. 1905. Pp. 335.

Raeder, Hans. *Platon's Philosophische Entwicklung*. Leipzig: Teubner. 1905. Pp. 435.

Small, Albion W. *General Sociology: An Exposition of the Main Development of Sociological Theory from Spencer to Ratzenhofer*. Chicago: The University of Chicago Press. 1905. Pp. xiii + 739.

Wasa, Rafael Karstein. *The Origin of Worship. A Study in Primitive Religion*. Press of F. Unggren. 1905. Pp. 142.

NOTES AND NEWS

THE following is from *Nature* for January 11: "In the *Biologisches Centralblatt* (December 15, 1905) Professor Gorjanovič-Kramberger discusses the relationships of the race of men whose remains have recently been discovered at Krapina, south of the Styrian frontier. From the examination of these remains it appears that the Krapina race is identical with the one from Neanderthal, Spy, La Naulette, Schipka, etc., for which the name *Homo primigenius* has been proposed. From this primitive

type there seems to be a complete transition in cranial characters, through the upper diluvial *H. sapiens fossilis*, to modern man, who occasionally exhibits some of the peculiarities of the ancestral form, such as the absence of the chin prominence and the presence of wrinkles in the enamel of the molars. The prediluvial race of Galley (? Gallows) Hill, England, presents a difficulty, since, although this is the oldest, it is at the same time the most modern type. This is explained by the theory of the existence at this early date of two distinct types of mankind, namely, *Homo sapiens fossilis* at Galley (?) Hill, which had attained a relatively high development, and *H. primigenius* at Krapina, Neanderthal, etc., the advance of which may have been prevented by unfavorable conditions of existence."

In the same number of *Nature* Mr. Charles E. Benham, of Colchester, points out that the theories of Rumford and Young to account for the phenomena of light and heat are anticipated by some sixty years in the 'Principia' of Swedenborg, published in 1733. Part III., chapter VIII., of the 'Principia' contains the following: "Whatever the ether presents to our organs by means of colours, the air presents to us by means of modulations and sounds. Thus nature is always the same, always similar to herself, both in light and in sound, in the eye and in the ear; the only difference is that in one she is quicker and more subtle, in the other slower and crasser." Other references are to Part III., chapter V., No. 21, and chapter VIII., Nos. 8, 9, 10, 16.

IN accordance with the terms of a fund established anonymously, a course of lectures will be delivered at Yale by professors from Harvard. The introductory lecture by President Eliot was on November 13, on 'Resemblances and Differences among American Universities.' Professor Palmer will give seven lectures on 'Some Aspects of Ethics,' and Professor Münsterberg will give one lecture.

PROFESSOR WILHELM OSTWALD, of the University of Leipzig, has completed his courses at Harvard University, and since January 25 has been giving two series of lectures at Columbia University, one on 'The Relations of Energy to Life and Thought' before the department of psychology, and one on 'Physical Chemistry' before the chemical department.

THE *Frankfurter Zeitung* announces that the faculty of philosophy at Giessen will issue hereafter its diploma in the German language instead of in Latin. This innovation by a German university body will, the *Zeitung* hopes, result in discarding the extravagant laudation of the budding *vir doctissimus* incidental to the Latin tradition.

ROMUALDO BOBBA, one of those who have helped the Italian philosophy of to-day to win respect, died on December 14 of the past year. Bobba began life as an ecclesiastic, but gave up this career in 1850. He was an active writer on subjects connected with the history of philosophy and with pedagogy.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

THE NATURE OF CONSISTENCY

CONSISTENCY is a queer thing, a jewel among the virtues and the bugaboo of little minds. We count the man who lacks it insincere, immoral or insane, but the one who pursues it too deliberately we regard as morally and intellectually priggish. It may be that disrepute has come upon the term because it has been used too abstractly, or because it has been pursued too formally. Like most virtues it is most admirable where it is least conscious of itself, and where it is most obviously attained it exists less as an abstract maxim of the will than as a growing harmony of activities based on a subtle unity of judgmental processes. In the game of life each must abide by its rules, but consistency is no mere conformity to rules, and life is at bottom not a game to be entered into or not as we choose.

1. To be consistent is to act consciously so as to maintain the system of activities of which each is a function. Consistency is a quality of self-maintaining activities, or again it is an immediate sense of self-maintenance in activities. Consistency is identity, but not the abstract identity of the schoolmen, not the mere absence of difference and variety. Scholastic tradition in logic favors a theory of consistency which makes truth a barren form, and reality either a day of dazzling brightness or a night of Cimmerian darkness. Modern logicians have pointed out that abstract identity can not be made the law of thought without reducing the syllogism to a *petitio principii*, the psychological process of inference to a sort of shorthand memory, and the absolute to an infinite vacuum.

Let us elaborate briefly. If the proposition, All men are mortal, be taken to mean merely that every man is a mortal man, the mere statement of a fact and nothing more, it can not warrant a conclusion that Socrates is mortal, because the latter statement is part of the former. The syllogism can be at best a process of teasing out of

major premises what we had already syllogistically packed into them, a process of marching down hill after we have laboriously marched up. If this were the meaning of the major premise, if it asserted a mere identity between subject and predicate, no possible finite experience could establish the truth of such a proposition as that all men are mortal, because no possible finite experience could comprehend the mortality of all men. On this theory of identity all general statements are mere records of past experience and are valid only for past experience: they do not serve, therefore, as the bridge from the known to the unknown, from the experienced to the unexperienced. If the subject and predicate of every true proposition are identical, no characterization of the absolute is possible, because all characterization implies some difference between subject and predicate.

The identity which underlies the syllogism is not an abstract identity of terms, but rather the consistency of the system of functions of which any set of terms is a case, the consistency of nature as a whole, for example. The facts and meanings of any particular mediate judgment are processes of nature or other determinations of reality which maintain the system of which they are a part, and such maintenance involves, not abstract identity merely, but identity in difference, identity of function in difference of content. Psychologically speaking, inference is not merely an identification of two terms because each is identical with a third. Such a process does not occur and would not constitute inference if it did occur. The inference Socrates-man-mortal is a single judgment, dominated by a single interest, and involving but one object of attention, namely, Socrates. It is unity of process rather than abstract identity which makes the inference possible. Moreover, if consistency rather than abstract identity be taken as the formal mark of reality, the real becomes no characterless continuum destitute of internal distinctions and variety, but a self-maintaining system of activities within which all activity falls.

Whether the real be regarded as one with experience or as transcending experience is at bottom a question of consistency. If we took up the question we should probably find that reality is simply consistent experience, that is, continuous and self-maintaining experience, so rich in resources and so organized in activities as to lack nothing which it really needs, an experience with no unsolvable problems and no unattainable goods, an experience whose content is completely at one with its existence. Whatever lacks anything can not be completely consistent with itself. The real is a whole which is its own end: it is to be found, not by eliminating needs and mani-

foldness, but by increasing manifoldness as long as need remains, that is, forever.

2. As an actual experience, consistency is an immediate relation felt as satisfaction, ease and peace of mind. It is not intoxicating, but as a pleasure it is vastly superior to any intoxication, because it draws no refuse of pain in its wake and because it is an index to all goods and to the avoidance of all ills. When children have been naughty, they are unhappy, embarrassed and uncertain of themselves; and they exhibit much the same emotional state when they find themselves in the presence of unfamiliar objects and situations. All that is new and unassimilated, all that is unusual and out of harmony with the existing organization of the self, is immediately distressing. Sometimes a child is aggressive and boldly tries to make his ordinary ways of reacting suffice for the new thing or situation: sometimes he meekly tries to reconstruct his habits of action. Analogous situations arise in adult thinking. We revise our classifications and remove our discrepancies with embarrassment and anxiety: and when we find an object which seems to possess inconsistent attributes, we are by turns perplexed and aggressive.

If I try to think of a book as weighing both three pounds and three pounds and a half, a destructive impulse is the result. The experiment is only possible by a sort of make-believe, but when it succeeds I feel as I would in a real situation, that the book is not what it pretends to be and that I am being insulted by some cheap fraud. What would be the emotions of a twentieth-century American in the presence of Faust's poodle swelling and contracting, taking now one shape and now another behind the stove? Faust takes it as calmly as though such strange phenomena were every-day manifestations of the presence of spirits, but Faust is supposed to have been accustomed to thoughts of magic. Charles Lamb once asked a servant who carried home a hare for dinner, 'Is that your own hair or a wig?' The faithful servant opened his mouth to reply, stammered, grew frightened and took to his heels. These are supposed objects to which no adjustment is possible, and the result is attitudes of aggression, fear and fright. Emotion is the natural result of a situation which presents self-contradictory aspects, a restless casting about accompanied by rising fear, anger, destructiveness or disgust. Inconsistency is immediately felt, as a rule, before it is seen and judged. Hence we incline to say that inconsistency is primarily a felt impossibility of reacting to the object or situation. Secondarily it is a characteristic of the situation in idea.

In logic consistency is inferred. Two conceptions consist with each other because both consist with a third, and the relation does

not here appear to be immediate. This, however, is logic and not immediate experience: it is logic, moreover, of a very formal and scholastic sort. It is undoubtedly possible to represent consistency in logical forms as mediate, but this does not prove that it is primarily mediate. Moreover, even for logic, inference is based upon certain underlying presuppositions which are themselves not inferences but demands and postulates of the inferential process, demands which remain demands to the end. For example, the law of identity. Any object of conception or judgment *per se* is eternally the same: conceiving it is representing it as the same, as universal, and this is a necessity of conception, a condition of there being any conception at all. Before there can be mental life on the conceptual plane, and in order that there may be such mental life, there must be intellectual habits, the possibility of reacting to many objects in one way. But this fact does not prove that the law of identity is valid. It merely proves, if it proves anything, that without identity we could have no experiences involving conceptions. No proof of the validity of the law of identity is possible, for all proof must assume it. Another illustration is the law of causation, whose universal validity is assumed in all reasoning. There is no proof of it which does not rest upon assumptions involving its validity. For further illustrations we might take such general hypotheses as the law of conservation, the maxim *ex nihilo nihil fit*, the principle of sufficient reason, and many more. They are demands for consistency as a necessity of judgment, and they are constitutive forms of the world of judgment for that reason. Either they are true or no judgment is possible, because judgment is essentially social. That which I now conceive must be the same for all intelligence. Before any relation can now mean anything for me, it must mean the same for all intelligence. All this is true, but these ultimate premises express at bottom, not demonstrable conclusions, but universal intellectual dispositions and attitudes which reflective judgment can not do without. Consistency is the fundamental demand of the mental life, a demand backed up by some of the strongest and most insistent emotions, a demand which aims at the continuity and self-maintenance of the activity in which the life of the mind consists. The discovery of consistency in a manifold of details is a joy, and the development of inconsistencies a brutal disappointment over which we are annoyed, anxious, frightened or angry.

3. Some light may be thrown on the nature of consistency by comparing it with the analogous laws of accommodation and habit. Within certain limits organisms can react into the conditions of life in such ways as to alter the conditions and maintain themselves,

and as conditions are sometimes such as no organism can cope with, they react so as to preserve the species or the life principle itself. But such purposiveness is not purposeful; that is, organisms are not as such aware of the ends which their actions tend to realize, and herein lies one difference between organic accommodation and consistency. Consistency is always conscious and reflective. It is a function of the social consciousness, being essentially an awareness of the compatibility or incompatibility of the object or situation to be judged with the social self. It is a sense of the harmony of the object with the organization of an ideal social self.

Consistency is not to be identified with the biological law of accommodation. Neither is it to be confused with the biological and psychological law of habit. All life, whether organic or mental, involves processes of selection and repetition going on among the reactions which the individual makes to stimuli. Habit is the tendency of actions to repeat themselves. Accommodation, the tendency of the more adequate mode of reaction to get selected for repetition in the future history of the individual. Consistency is not habit, for much the same reason that it is not accommodation. Habitual activities are for the most part unconscious and unreflective, becoming more unreflective as they become more habitual. Reflection begins when habit proves inadequate to cope with the conditions of life and happiness: and reflection is selection based upon and guided by habit. Consistency is the tendency of reflective beings to react into the conditions of life in such ways as to maintain the self of organized habit, a tendency to be realized through the reorganization of habit. It thus partakes of the nature of both habit and accommodation, differing from both in being conscious and reflective, in being free, purposeful and self-determined.

The machinery of the reconstruction of habit and the reorganization of the self-conscious life exhibits some aspects of consistency. Habit is often represented as a closed system of bodily change resulting from past activities and involving nothing more. This strictly mechanical view does not closely represent what actually takes place in the life history of individuals, and throws little or no light on the methodology of judgment. It is too formal. In Spencer's psychology this view of habit as a law of growth is made fundamental. Reactions to stimuli are determined in the first place by the nature of the stimulus and the physical characteristics of the organism. The wave of molecular change within the organism takes the line of least resistance, and issues in movements, the energy of which is quantitatively equivalent to the energy of the stimulus acting under the conditions of its transmission through the organism.

Repetitions of the stimulus result in repetitions of the movement, because the line of molecular change first followed is made more permeable by the first process. Thus habits are established, and habits induce nerve fibers and psychophysical organization.

But stimuli do not occur in the regular and periodic manner which this conception of the origin and nature of habit assumes. Growth takes place, not so much by favor of a fostering environment, as in spite of one which does not foster growth. Life is a process of getting the proper stimuli, rather than a passive receiving of them from the environment. There is, moreover, a certain purposiveness in all organic reactions which is not reducible to purely mechanical terms. Mechanism is only one form, and that a low form, of consistency. Such sciences as logic are under the necessity of stating the phenomena of life in purposive terms. Organisms react to stimuli, not only according to the nature of the stimulus, but also according to their own nature. Moreover, growth proceeds by reacting to old stimuli in new ways as well as by reacting to new stimuli in old ways, rather than by adding one mechanical process to another as variations in stimuli demand.

As all organic activities are purposive and possess a prospective reference, genetic theory must revise the notions of habit and the reflex arc (which stands for habit) so as to include the purposive factor. Habit is not merely an arc which begins with a stimulus and ends with a movement. It is rather an aspect of a spiral process which repeats its own stimulus, and so maintains and develops itself. Old and habitual movements are continually bringing the individual into situations for which no habitual movement is adequate. There are, thus, conflicts and discrepancies of habit which lead to new departures in the activities of the individual and the species. If a new situation or stimulus is pleasure-giving or satisfying to a greater degree than the old, it is sought again and again, the variation from habitual movements is repeated, the old process becoming a memory, a thing of the past. As the new reaction is verified by further actions, the new stimulus becomes a reconstruction of the old, the new purposiveness a reconstruction of the old, and the new movement likewise. Thus successive variations in activities arise and lead to a series of reconstructed stimuli and movements, both of which make contributions to the purposive factor of the process.

It is presupposed in this view that habit is not in fact entirely distinct and separate from the process called in biology accommodation, and in psychology selection. Stereotyped repetitions of previous activities seldom occur in actual life histories. Habit is as

much a scientific abstraction as the laws of motion or the doctrine of conservation. Habit is an indispensable way of conceiving biological and psychological phenomena, but it is not the only way of conceiving them. Life is a continual reformation of habits, a continual process of acquiring life-maintaining activities.

In the sphere of sentient life the pleasure-pain value of a sensation is fused with the sensation and counted as part of the 'given data' of the process. The motor processes are altered. The purposive attitude is changed from get-this-sensation to get-that-sensation. Old and partly abandoned processes become memories, things of the old and familiar past. These are immensely significant when the individual finds himself, as he is continually doing, in the presence of data which for him are new and unfamiliar. The new situation starts old memories into activity. Assimilation begins, association processes flit across consciousness, alternative possibilities and the rudiments of deliberation appear in the form of hesitation, restlessness, tension, emotion and attention. This is not the place for an extended account of these processes. Functional psychology, written from the genetic point of view, inclines to hold that the entire order and organization of mind depends upon the mind's response to its world. The individual's response to a stimulus, rather than the stimulus, determines the object. The kinesthetic results of movement, together with the more remote results of it, give the mind its motor ideas and cues. The total results of past activities determine present purpose.

4. Consistency is in some respects closely akin to assimilation, for the latter is the influence of the past over the present in mental process. In assimilating a stimulus to some past object of experience we vindicate the existing organization of the intellect. Consistency is, however, a characteristic of judgment and reflective mental activities, as we have seen, and assimilation is not primarily a reflective process. In judgment we establish correspondences between subject and object in ways which are of great importance to the entire mental life of the individual. In the other process no such correspondence is present to consciousness. In assimilation there is no consciousness of the likeness of present to past stimuli, and the process does not involve a sense of objectivity or universality such as is involved in all judgment and consistency. Closely akin to assimilation is suggestion in which a given stimulus is the cue for a motor response determined either by past experience or by the actions of others. The flame which burns the hand of the child becomes a pain-giving thing for the future, and the little one reacts to it, not by the original movement through which he learned to

know it, but by the recoil which followed the burn. Through imitation of the movements of others, a hat becomes a thing to put on the head, a door-knob a thing to turn. Not that the thing and its attributes are distinct to the child and the lower animal at the suggestion stage of mental growth. They are not distinct. The thing is its attributes, or rather the distinction has not yet arisen at all. There is here no consciousness of the object *per se*, no judgment and no consistency. Assimilation and suggestion go to make judgment and consistency possible, but they are not themselves forms of consistency. They come nearer being forms of intellectual habit, and we have yet to inquire how consistency can arise out of such habits.

It does not appear how objectivity and generality could arise out of the process of reconstructing habits as we have referred to it above. The mere addition of one particular experience to another, no matter how habitual they might become, can not account for the rise of the general and the uniform. The general is no mere sum of particulars. It comprehends the future as well as the past, the unexperienced as well as the experienced. Generality and objectivity involve a different mode of consciousness from the mere acquaintance with things which minds in the prereflective stage of development possess. Prereflective acquaintance with things involves reaction *into* rather than to things, through which things undergo transformation. Before the individual can be conscious of the transformation as such, or of things as such, or of his acquaintance with them, he must be able to reflect upon his own activities. That is to say, his own activities must become the objects of another activity of the mind,—he must become the observer and critic of his own processes. The particular is generalized by what we might call a generalizing reaction, by reflection, before it acquires universal and objective significance. The circle of habit with its stimulus, purposiveness and movement, both as a whole and in its separate arcs, becomes the datum and condition of a reflective activity, the standpoint of which is the self of all experience.

The rise of objectivity and consistency can not, therefore, be prior to the rise of the self-thought and social consciousness. It is one phase of the genesis of reflection. The term object, as currently used in modern philosophy, seems to possess three meanings. (1) It is the presented datum of immediate experience, the empirical property or properties (not known as such) which my present interest selects as the significant feature of a present situation. (2) It is the empirical property or properties of an object (known as such) present and significant in all experience involving a certain

type of situation (the definition of substance as the empirical properties of a thing, which figures so largely in Locke's discussion). (3) The object as bare existence, the thing in itself, independent of all particular experiences (the 'substratum' of empirical properties or the 'being' of the object, which also plays a large part in Locke's discussion). These three meanings of the term object arise in connection with three corresponding meanings of the term subject. There is, first, no distinction between subject and object. Then the object appears as both a state of consciousness, a subjective thing, and as independent of all consciousness, a mere existence. A large part of modern philosophy, indeed the whole of it, is concerned with the relations of these various objects and subjects to each other. Ancient Greek and Medieval philosophy returns again and again to the relation of the universal to the particular as the all-absorbing problem of reflection, while modern philosophy has shown a predominating interest in the relation of object to subject in experience. Some logicians have assumed that the universal or meaning is entirely subjective, while the bare existence to which meanings attach is particular and objective. The solution of the problems growing out of these fundamental distinctions depends upon recognizing that the latter are essentially genetic, functions of the social consciousness and demands of consistency. The universal and the particular are both of them subjective and objective.

One is forced to speak as though the consciousness of self and the consciousness of the objective world were two different consciousnesses. They are both reflective and they come separately. They do not come together. They belong, however, to the same plane of development. They are functions of the self-thought. This thought brings with it, not simply a consciousness of social relations and obligations, but also a consciousness of objects as such. The objective world is a function of the same development as the moral law and the institutions of society. The socialized individual realizes that all genuine objects are universal in experience by the same sort of reflection as that all sanctioned conduct is demanded by experience.

5. The self maintained by consistency is always the ego-alter, bipolar self of society, the self of socially significant activities, and consistency is characteristic, not only of valid thinking, but also of valid movements and emotions. Just as we think in universal terms and hold our judgments to be universally valid, so we try to act as all must act and enjoy those things which all may enjoy. If we were trying to trace the origin of consistency, we should find it closely bound up with the origin of the self-thought. The consciousness

that experience ought to be universalizable, and in this sense social, is the consciousness of consistency as an ideal which includes one's entire personal activity. The marks of first and fundamental truth of which the Scottish school makes so much are all definable in terms of consistency—the universal as that which maintains the universal self of experience, the self-evident as that which is immediately compatible with the existence and organization of the self, the necessary as that which the self demands for its maintenance. The difference between the judgment 'I like it' and the judgment 'It is beautiful, or good, or true' is a difference made by the absence of consistency from the former, and its presence in the latter. Universality, self-evidence and necessity are characteristic of the latter and not of the former, so that we may say, that which is beautiful or true or good ought to be so to all men and minds. The demand for consistency is that activity continue without let or hindrance from itself. The laws of number and space, the oneness of the universe as a whole, the universality of causal relations, the principle of non-contradiction, the laws of duty and of love, may be regarded as forms of this demand. They must be true if thought and action are to continue and maintain themselves. The ultimate purpose which underlies and determines all forms of consistency must be its own end and satisfaction, much as it may demand for its realization. Perhaps the end of the purest love is love, as the end of any iterative process, like the number series, is the process itself unhindered. In the various aspects of experience this demand for self-maintaining activity exhibits itself in norms.

6. The nature of consistency may become clearer if we pause for a glance at inconsistency. There could be no inconsistency in a bare fact, if such a thing entered into the experience of a reflective being, because a bare fact could exist only as an immediate datum of experience. It would necessarily be purely private. It could be neither true nor false. It would be simply there. Neither could two or more such facts be said to contradict each other. They, too, would be simply given. We believe it impossible to find a bare fact in reflective experience. Mere fact and mere value are alike abstractions. The truth is that consistency is a matter of value, rather than a matter of fact, and all values are social. Contradiction arises first when we judge and conceptually interpret facts for further experience. It arises because such activity must take its place in a system of social activities. Such activity is essentially social. The principle of selection in judgment is no longer the private interest of the individual, but the interest of society, the interest of universal experience as represented in the socialized individual who judges. The individual can never be absolutely sure that any variation from

accepted and organized conceptions will be available for purposes of control in further experience, that is, be ultimately accepted and adopted. He can at most seek an ideal of consistent response to the conditions of reflective experience from moment to moment, trusting his immediate sense of consistency as a guide. To this effort the fact of inconsistency and contradiction in the conditions of life is the great incentive. Here is the sphere of opinion, worry and belief. Here the noblest solicitudes and the profoundest struggles arise. Here the deepest peace is found.

We should carefully distinguish between contradiction and other logical oppositions. Some of these are mutually exclusive, and some are not. Contraries sometimes include a contradiction within them, but subcontraries do not, and terms which are merely opposite, like happiness and misery, heat and cold, may without contradiction be affirmed or denied of the same subject. Mere difference is not contradiction. The grass may be both green and cool. A man may be both tall and miserable. There can be no contradiction without some sameness. All this belongs to the elements of logic, to be sure, and there could be no apology for introducing it here were not these simple considerations often overlooked in philosophical discussions. Contradiction has been too often defined as the absence of abstract identity, a definition which leads straight to the abattoir of philosophical nihilism. The gloomy, taciturn Heraclitus and the far-seeing Parmenides alike seem to have conceived the real in objective terms only, and consistency as abstract and absolute identity. The contention that where we have terms in relation we do not have reality loses its force if reality covers all that is consistent with the self, all that is self-maintaining. A reality entirely apart from the self is inconceivable. The first book of Bradley's 'Appearance and Reality' proves just this, that apart from experience nothing is real, while within experience everything is real which consists with the self. Everything is real just where it stands in and of the context of the experience of a reflective being. It is the response aspect of experience which discovers contradiction in the data of judgment.

G. A. TAWNEY.

BELLOIT COLLEGE.

FEELING AS THE OBJECT OF THOUGHT

IT is said that thought transcends itself, points beyond itself, or seeks its own other. The question is: what does it point at? and my answer is, that it points at feeling which reciprocates by pointing back at thought. The philosophical situation has been that at various times people have asked what is the relation between

the universal and the particular, the possible and the actual, nature and freedom, society and the individual? My belief is that the question is also adequately expressed in the distinction between feeling and thought, and that whatever solves this question solves also the others. Feeling I should define as the experience of unity, internally simple and homogeneous, but as understood by thought, the index of conflict or the stress of diverse things.¹ Feeling is synthetic, emphatic, intense. Whatever is felt is grasped not 'by a successive synthesis, but all at once.'² These predicates suggest certain predicates given to the absolute, and with this I shall try to compare feeling. If feeling can support the comparison, then it may serve as well as the absolute to be the object, the stimulus, the fulfillment, or the other of thought.

To have any faith in the ultimateness of the feeling-thought distinction, I think one must agree that there are two attitudes which are equally final and equally characteristic of 'the human predicament.' The one attitude would be called that of sincere and rational striving for some special end. We find ourselves involved and we long to get out, to finish the business or discharge the obligation, and to have the stimulus let up. This might be called the work-attitude. On the other hand there is the no less real leisure-attitude. At first sight this appears perhaps more flippant than the other; it is the case of the person who, in vulgar parlance, is looking for trouble. One of the critics of pragmatism has asked: "But do we never judge except to get out of some scrape?"³ And it must be admitted that we frequently do take thought for the express purpose of getting into some scrape. More seriously, we call this frame of mind intellectual curiosity. What we are all after in this situation is sheer excitement or stimulation. We want stimulation without much caring what sort—to be doing something, irrespective of the outcome. One of Henry James's heroines says: "A swift carriage, of a dark night, rattling with four horses over roads that one can't see—that's my idea of happiness." Now in the first attitude what we desire is some thought-out conclusion, some express and special thing. But in the second attitude we are not at all particular about conclusions, we want indiscriminately so long as what we get shall be intense enough,—that is, we do not *know* what we want, but we want it very badly. In the work-attitude, feeling is the thing given and what we desire is thought; but in the leisure-attitude our datum is work accomplished and what

¹ See the writer's articles in this JOURNAL, Vol. II., Nos. 23 and 24, on the relation of feeling to discrimination and conception.

² Century Dictionary, definition of 'intensity.'

³ Sheldon, this JOURNAL, Vol. I., No. 4.

we want is feeling. Living is for us, then, a rhythm of these two situations.

The two attitudes we have described find expression in the two most ultimate social processes, namely, the artistic and the scientific. The scientist finds problems and necessities on his hands, which constitute his stimulus and his emotion. He tries then to work out solutions, quantitative statements and complete controls, he dissects, expresses and flattens out his situation and at length presents us with instruments and means. The scientist does not, as scientist, want any emotion, because that is what he starts with. He wants thought, analysis and solution, and his results are mechanical because he is analyzing and not constructing the situation. The artist, on the contrary, starts from a perfected situation and builds up for us a new problem. He persuasively points out the inadequacy of the perfect situation, and gives us so a shock or a new qualitative experience. He presents a conflict, and therefore an emotion. While the scientist finds solutions, the artist finds problems.

In saying that the artist sets problems I am assuming a certain point of view about the esthetic experience. That point of view is that the appreciation of beauty is, in part at least, essentially painful, that the work of art is not primarily a satisfaction, but a problem. Those who themselves find only abundant joy in the esthetic experiences would probably admit that there are many persons who may be pained by the best art, and one must of course wince at the implication. Nevertheless, I, for one, fail to find in the apprehension of the beautiful the traditional absorption of subject in object, the perfect moment, the translation into a clearer medium, or the grand reconciliation of every warring element. This description applies well enough to the more commonplace esthetic experience, but in the presence of something which—even without the assistance of 'some blabbing book'—I know to be greatly beautiful I feel unmistakably some painful emotion. There are, of course, numerous incidental satisfactions in it, but the thing as a whole is stimulating beyond my capacity.

The artistic and scientific interests do not, of course, always inhabit separate individuals. The artist himself must treat his material in a scientific way, and the scientist in his quest of the unknown is following an artistic impulse, but the artistic and scientific attitudes remain, nevertheless, distinct.

Metaphysics, it seems to me, should be classified among the artistic as opposed to the scientific pursuits,—in fact as a branch of the art of letters. The structural resemblance is not so apparent, but the function of metaphysics and of art is the same. Metaphysics does not solve, but only sets problems; its function is stimulative,

suggestive, emotional, and it affords distinctions which are chiefly felt, not known.⁴ But to reproach metaphysics on this account for its non-productivity is like reproving the Sistine Madonna for not doing the cooking. Certain teachings of the pragmatic philosophy illustrate this view of metaphysics. Dewey says: "Immediate empiricism postulates that things . . . are what they are experienced as."⁵ James says: "Experience as a whole is self-containing and leans on nothing."⁶ And is this not exactly the standpoint of the artist in regard to the experience which he offers? In the action of Whistler *vs.* Ruskin, the question is put to Whistler concerning his 'nocturne in blue and silver.'

"Do you say that this is a correct representation of Battersea Bridge?"

"I did not intend it to be a 'correct' portrait of the bridge. . . . As to what the picture represents, that depends upon who looks at it. To some persons it may represent all that is intended; to others it may represent nothing."

"The prevailing colour is blue?"

"Perhaps."

"Are those figures on the top of the bridge intended for people?"

"They are just what you like."

If one grants that metaphysics is justly considered a branch of art, and that what art does is to put to us a qualitative problematic experience, then I should say one must accept pragmatism as an adequate expression of philosophic method. This *desidero ergo sum* philosophy makes conflict the ultimate thing. The fact of conflict we experience as feeling or emotion, the meaning of conflict is understood by thought or experienced as a cognitive process. Coming back to the question whether feeling is adequate to play the part of the other of thought, I should say that it seems to answer, with one exception, the demands actually made upon the absolute. The absolute must unify experience, but feeling as a simple, abstract, intensive synthesis does that very creditably. The absolute must also be 'stubborn' and emphatic, but feeling is just as refractory, just as intense and brutally real as anything imaginable. If it seems that since feeling and thought both come out of one's own self the conflict must be lacking in dramatic interest, I should reply that from the modern standpoint a conflict

⁴What, for instance, is Kant's 'simple conformity to law in general' except a certain temperamental docility; or what is Hegel's method of negation more than contrary suggestibility?

⁵This JOURNAL, Vol. II., No. 15.

⁶This JOURNAL, Vol. II., No. 5.

⁷'The Gentle Art of Making Enemies,' p. 8.

within a self is the only real struggle. For vividness of dramatic interest, for power to stir terror and pity and a sense of the inevitable stubbornness of things, there are few cases more striking than Dr. Prince's⁸ record of Miss Beauchamp and her alternating personalities. The one characteristic of the absolute which feeling does not exhibit is its superiority to thought. But I see no reason for assuming that thought in pointing beyond itself necessarily points up. Why should the real other of thought be any better or more real than thought itself? "There is an absolute experience," says Royce.⁹ "This absolute experience is related to our experience as an organic whole to its own fragments." "The conception now reached I regard as the philosophical conception of God." If, however, feeling is the experience of unity, what is the use of another unity on top of it, or if we must have an absolute, why not absolute conflict? Feeling and thought seem to me adequate to support one another without the need for any third thing to join them or differentiate them. I am indeed quite of Mistress Quickly's mind—"So 'a cried out—God, God, God! three or four times: now I, to comfort him, bid him 'a should not think of God; I hoped there was no need to trouble himself with any such thoughts yet."

KATE GORDON.

MOUNT HOLYOKE COLLEGE.

DISCUSSION

THE MEANING OF IDENTITY, SIMILARITY AND NON-ENTITY: A CRITICISM OF MR. RUSSELL'S LOGICAL PUZZLES

IN Mr. Russell's article 'On Denoting,' published in *Mind*, N. S., No. 56, certain logical puzzles are stated which the author believes are only to be solved by his own confessedly complicated theory. These puzzles seem to me to be soluble by a different and simpler method, which it is my purpose in this paper to explain.

Mr. Russell's first puzzle runs as follows: "If *a* is identical with *b*, whatever is true of the one is true of the other, and either may be substituted for the other in any proposition without altering the truth or falsehood of that proposition. Now George IV. wished to know whether Scott was the author of *Waverly*; and in fact Scott *was* the author of *Waverly*. Hence we may substitute Scott for *the author of Waverly*, and thereby prove that George IV. wished

⁸ 'The Dissociation of a Personality.'

⁹ 'The Conception of God,' pp. 43-44.

to know whether Scott was Scott. Yet an interest in the law of identity can hardly be attributed to the first gentleman of Europe."

The trouble here, I think, is in the wrong meaning which Mr. Russell attaches to the concept 'identity.' It is surely false to say, as he does, that if *a* is identical with *b*, whatever is true of the one is true of the other. Identity is the name for an incomplete duality. To say that *a* and *b* are identical in every respect, and substitutable for one another in every system, is always contradictory, regardless of what *a* and *b* may be. For in so far as one is called *a* it is not identical with the other in so far as the other is called *b*—or, more generally, the sense in which they are two is not the sense in which they are not two things, but one thing. The two things 'named Scott' and 'wrote Waverly' coexisted as attributes of the same real individual. They are identical only in that respect, and can only be substituted for one another when so considered. To change the statement 'George IV. wished to know whether Scott was the author of Waverly' into 'George IV. wished to know whether Scott was Scott,' is to assume that whatever things were identical as objects in the order of nature were also identical in the imagination of George IV. Instead of constituting a puzzle requiring an esoteric solution, we have only a neglect of the truths (1) that the terms of a proposition are always members of more than one system or universe of discourse, (2) that difference in one system is not incompatible with absence of difference—or identity—in another system, and (3) that identity of two terms in one system actually presupposes their non-identity or duality in some other system. We refer an identity of terms to one system by means of their duality in another. The system referred to is always the real, objective or primary system, while the system by which the reference is accomplished is the instrumental, subjective or secondary system. We testify to the primary or existential character of the system to which a propositional relation, *a* is *b*, is referred by the use of the verb *to be* both as a copula and as symbol for existence.

The notion of absolute identity on which this puzzle is based has of course been often criticized, but the criticisms have usually been made by Hegelians, who have tended to go to the opposite extreme and defend the view that *a* and *b* are different in the same system as that in which they are identical, the conflict of the two relations producing a dialectical advance to a third. It may well be that Mr. Russell and Mr. G. E. Moore have been led to their Eleatic exaggeration of the identity principle by a laudable dislike for the Hegelian confusion. The truth, as we have tried to show, lies between the two. Identical things are (*contra* Russell) always also

non-identical, but the identity and non-identity subsist (*contra* Hegel), not in the same, but in different universes of discourse.

Before leaving this question, I wish to show the bearing of the 'two-system' theory of the judgment upon the dispute as to whether perfect similarity is identity or something quite different. The judgment of perfect similarity is like the judgment of identity in so far as it involves two systems, in one of which there is a duality of the terms and in the other an absence of duality. The difference consists precisely in this: *In 'identity' the duality of the identical terms is present in the instrumental or subjective, and absent in the existential or objective, system; while in 'similarity' the duality of the similar terms is present in the objective and absent in the subjective system.* In identity the sense in which the terms are dual is subjective and incidental, while in similarity the sense in which the terms are two is believed to be real and the sense in which they are one is regarded as secondary or subjective. This definition helps us to see how people in virtue of their different metaphysical views can differ as to whether a given relation is one of similarity or identity. To the Platonic realist, for example, Tweedledum and Tweedledee are identical, while to the nominalist they are merely similar. Tweedledum and Tweedledee are here taken as affording an instance of two beings possessing identical qualities, but differing in the positions which they occupy in the spatio-temporal order. To the Platonist, for whom qualities are the ultimate realities, the only objective or real difference is difference of quality; difference of spatio-temporal position is subjective or accidental. For the nominalist the situation is the reverse; the real universe is the universe of spatio-temporal positions, hence if there is duality of position—as there is between Tweedledum and Tweedledee—there is also a duality of being, and what the Platonist describes as one essence exemplified in two places, an *identical reality* possessing *different accidents*, he, the nominalist, will describe as *different realities* possessing *identical accidents*, and so being merely 'similar.' We are thus able by means of the two-system doctrine to define the difference between similarity and identity *without*, as is too often the case, prejudging in any way the issue between a nominalism such as that of Professor James and a realism such as that of Mr. Bradley.

We may now pass to another of the puzzles mentioned by Mr. Russell, which may be solved by the method used in dealing with the first. "Consider the proposition 'A differs from B.' If this is true, there is a difference between A and B, which fact may be expressed in the form 'the difference between A and B subsists.' But if it is false that A differs from B, then there is no difference between A and B, which fact may be expressed in the form 'the dif-

ference between A and B does not subsist. But how can a nonentity be the subject of a proposition? . . . Thus if A and B do not differ, to suppose either that there is, or that there is not, such an object as 'the difference between A and B' seems equally impossible."

Now, just as we found before that 'the difference between Scott and the author of *Waverly*' was perfectly capable of subsisting in the system of 'objects considered by George IV.,' and that that subjective difference, so far from being incompatible with the identity of the terms in the system of 'persons living on the earth,' was actually necessary to its assertion, so now we may say that 'the difference between A and B' is, in the example cited, a truly subsistent object in the system of 'objects considered by Mr. Russell and his readers,' and that this fact is not incompatible with, but rather a necessary condition of the assertion of the non-existence of 'difference between A and B' in the objective system to which the proposition refers.

Both of these puzzles are thus solved by the application of the two-system view of judgments. But whereas the application of the theory to the first puzzle showed the absurdity of the concept of 'absolute identity,' its application to the second shows the equal absurdity of 'absolute nonentity.' A thing can be a nonentity in the primary system of existent objects only if it is at the same time a positive content in the secondary or thought system of *Meanings*, i. e., objects which are subsistent and not necessarily actual or even possible.

Mr. Russell's third puzzle involves again the concept of non-entity, only instead of relating to our right to make nonentity the subject of a proposition whose predicate is non-existence, it concerns the apparent necessity of making affirmative judgments about non-entities. The puzzle is stated as follows: "By the law of excluded middle, either 'A is B' or 'A is not B' must be true. Hence either 'the present king of France is bald' or 'the present king of France is not bald' must be true. Yet if we enumerated the things that are bald and then the things that are not bald, we should not find the present king of France in either list. Hegelians who love a synthesis will probably conclude that he wears a wig." It seems to me that a being that is not, is of necessity a being that is not anything in particular. Of impossible beings like 'the present king of France' or 'round squares' every affirmative judgment will be false and every negative judgment will be true. In the list of beings who are not really bald, we must include all those beings who are not really anything. Thus (treating baldness as a positive attribute) the class non-bald includes all the real beings who are not bald and all the unreal or merely definable beings, whether bald

or non-bald or both or neither. The only judgments that can be truly made about impossible objects are negative. We may then qualify Mr. Bradley's doctrine that reality is the subject of every judgment by saying that the subject of every judgment whose copula is affirmative is real. This means, however, that existence is in itself neither a predicate, as Anselm seems to have held, nor a subject, as Mr. Bradley holds, but rather, as Leibniz believed, a relation between subject and predicate. For a content to be, it must be compossible, *i. e.*, coexistent with other contents. And here, again, we see the significance of the same word 'is' being used as an affirmative copula and as a symbol of existence.

In conclusion, we may state that between the universe of real existence and the universe of mere subsistence there intervene a number of systems, membership in which confers a relative existence. For example, some one may have dreamed of a present king of France or written a romance in which he figured, and in such systems the terms may sustain to one another such relations as their authors may choose, without any limitations whatever. Affirmative judgments expressing such relations will always be false, except when accompanied by the statement of the unreality of the system to which they are referred.

W. P. MONTAGUE.

COLUMBIA UNIVERSITY.

REVIEWS AND ABSTRACTS OF LITERATURE

Tertulliano e la filosofia pagana. G. BONFIGLIOLI. *Revista Filosofica*, May-June, 1905. Pp. 356-376.

La Psicologia di Tertulliano nei suoi rapporti colla psicologia Stoica. G. BONFIGLIOLI. *Revista Filosofica*, September-October, 1905. Pp. 467-493.

The writer's purpose is to do belated justice to Tertullian. He begins his second article with a clear statement of his thesis. "Tertullian . . . when better studied in detail reveals himself as not deserving the common judgment which confounds his name with the multitude of Christians of the early centuries who hated and denounced the pagan world without discussing it. In treating of his general argument I sought to show that notwithstanding the anathemas launched against the philosophers of antiquity, notwithstanding his contempt for ancient wisdom, Tertullian was, nevertheless, unable to evade the influence of philosophical theories, and that in particular he imitated the Stoics. But it is in his psychology that his dependence on the Stoic school is most evident, since it was in the materialism of this school that Tertullian found the most effective means of opposing what he regarded as the common basis of the Gnostic doctrines, the hated Platonic theory."

To be sure, Tertullian regarded 'philosophy' as the work of the devil, as the parent of all heresy, as prepared solely for the glorification of its human inventors, and he exults in the prospect of seeing the philosophers burn in hell fire. But we may ask: To whom is the term 'philosopher' applied, and what is the ground of so much bitterness?

Philosopher and heretic are equivalent terms for Tertullian, and the 'heretics' are the Gnostics, who had undertaken to inject elements derived from pagan philosophy into the Christian doctrine. And since the Gnostics made use chiefly of the Platonic tradition, it is natural that Tertullian should feel toward this an especial animosity. He would destroy Plato in order to demolish the philosophical arguments which supported the Gnostic heresies. Wherever Tertullian breaks into one of his fiery invectives against Greek philosophy, he is pretty sure to use some epithet which shows that he has in mind the sect hostile to the traditional church. Aristotle, too, is denounced, since from him the Gnostics get the concept of matter, and the Stoics offend in daring to attribute matter to the divine substance.

Yet in spite of the fact that the philosophers of ancient Greece were without the revelation of Christ, and therefore knew not God, Tertullian makes abundant use of their opinions in so far as these help him to attack the Gnostics. For Tertullian was a learned man, familiar with pagan literature and acquainted with Greek philosophy; and the study of law, to which he seems to have early devoted himself, must have helped him to appreciate the practical spirit of the ancient thinkers. His reflective attitude appears in his respect for 'nature.' "Nature is our first school; whatever is contrary to nature is monstrous." And "All that is born is of God; all that is invented (*fingitur*) is of the devil." In spite of corruption, a part of that nature which was like God has been preserved. This is reason. God is its guide and master. When the ancient thinkers follow the guide of reason, then their thoughts do not merit derision; for the soul will instinctively declare the truth. In this way Tertullian shifts his position so as to be able to appeal, on occasion, to the philosophers. Numerous citations from the physicians show how he had looked for psychological evidence in harmony with his own doctrines, and even from Plato and Aristotle something is taken.

But it was in the Stoic materialism and sensationalism that Tertullian found the best weapons with which to combat the Platonic immaterialism. "*Paene nobiscum sunt*," he wrote, thinking of the Stoics. Bonfiglioli thinks the sentence would be more sincere without '*paene*,' and he quotes with approval the following from Havet ('*Le christianisme et ses origines*'): "Tertullian, instead of saying 'Seneca belonged to us,' ought to have said 'It is from Seneca that I and my own masters have received the greater part of our doctrine, and it is to him and to other philosophers of the Stoic school, more than to the sacred books that we owe our theory of the spiritual life.'"

Accordingly, whatever is, is body: "*Omne quod est, corpus est sui generis*"; "*Nihil est incorporale nisi quod non est*"; "*Nihil enim Anima*

si non corpus"; "*Spiritus enim corpus sui generis in sua effigie*"; and all '*substantia*' must be '*corpus*.' *Substantia* is for Tertullian precisely equivalent to *ὑποκείμενον* in the Stoic usage, the material substrate which nearly coincides with their highest concept '*τί*.' In the writings of Tertullian the same relation exists between *substantia* and *res*.

Not only is the divine nature corporeal; so is the word, the *λόγος*. They must be corporeal, since in the Stoic doctrine, adopted by Tertullian, only corporeal things can act upon other things and be effected by other things. According to Diogenes, *πάν γὰρ τὸ ποιοῦν σῶμά ἐστιν* and Sextus Empiricus defines *σῶμα* as *ὃ οὐδὲν τε ποιεῖν ἢ πάσχειν*, and Cicero: "*Nec vero aut quod efficeret aliquid aut quod efficeretur posse esse non corpus*." Also Tertullian's idea of *corpus* is identical with the Stoic notion of *σῶμα*. Even such things as virtue and vice, true and good, anger and love, friendship and hate, are corporeal; they are cases of tension (*τόνσις*) of the pneumatic soul substance (*πνεῦμα*).

Tertullian is most concerned to prove that the soul is a body, and resorts to many ingenious arguments. Since the soul is derived from God, and is '*deo propinquus*,' '*deo proximo*,' it is corporeal like the divine substance, and also because it can act and be acted upon. Again, since, in the Stoic doctrine, the arts are corporeal and the soul nourishes itself by them, the soul must be of the same nature. The soul, although derived from God, is differentiated from God. The soul is *flatus*, God is *spiritus*. The soul is not, as the Gnostics said, a part of God. On the other hand, the soul is as intimately related to man. The body of the flesh and the pneumatic body make up together what is called man. The pneumatic body is in many respects a duplicate of the carnal body; it has a definite sex. In the act of generation the soul reproduces itself and the body reproduces itself. It reaches sexual maturity when the body does. It differs from the carnal body '*tenuitate sola vel subtilitate*,' and it has the color suitable to such subtile corporeality, *viz.*, the blue of the heavens. That this pneumatic body does not reveal itself to the carnal eye is no proof that it does not exist. It does not follow that it is invisible to God and the saints. In addition to the above-mentioned arguments for the corporeality of the soul, Tertullian appeals to the sacred writings wherein there is mention of pains in hell and joys in heaven. But only a body is capable of these. Nor was there lack of direct human testimony. A prophetess of the Montanist sect had declared that while in an ecstasy she had beheld the Savior, the angels, the souls of the dead; these were soft to the touch, transparent, of a bluish color, and similar in form to our own bodies. Tertullian appeals also to various empirical demonstrations drawn from the physicians and naturalists.

Tertullian was at pains to demonstrate the unity and simplicity of the soul, being anxious to combat the doctrine of Valentinus that in the first man the soul was indeed of a single uniform type, but that in the course of time it had become multiform. In this mood Tertullian identifies *anima*, *animus* and *spiritus*, regarding them as different aspects or determinations of the one original substance.

Nevertheless Tertullian admits the division of the soul into *rationalis* and *irrationalis*. The distinction is not so sharp, however, as the λογιστικόν and the ἄλογον of Plato. Tertullian affirms that the soul, being from God, is rational by nature, and the property of irrationality is a corruption accomplished by the devil. And within the soul there is a dominant factor, a ἡγεμονικόν, having its seat in the heart. On the whole, however, "*huiusmodi autem non tam partes animae habebantur quam vires et efficaciae et operationes . . . non enim sunt substantiae animalis, sed ingenia, etc.*" each of which corresponds to a πᾶς ἔχον ἡγεμονικόν.

In his theory of dreams and in his theory of the intuitive power of the soul, Tertullian closely follows the Stoics. The soul, being immortal, can never cease from activity; it neither needs repose nor could possibly take it. Sleep, far from hindering the spontaneity of the soul, leaves it free, just as ὕπνος was defined by Diogenes as the liberation of the soul from the service of the senses. Tertullian explains that during sleep the soul in the fullness of its liberty displays its full activity in dreams, which are states of ecstasy in which the gift of divination ('*periculi aut gaudii augurem*') is enjoyed. In combating Hermogenes, Tertullian is willing to cite even Plato in order to prove the '*divinitas animae quae in praesagio erumpit*.'

The articles are provided with abundant references to the texts. Whoever should look them all up ought to find himself thoroughly *orientiert*.

WENDELL T. BUSH.

COLUMBIA UNIVERSITY.

Hirnhysiologie und Willenstheorien. PAUL FLECHSIG. *Annalen der Naturphilosophie*, Bd. 4, Heft 4, 1905. S. 475-498.

By way of introduction to his discussion of the relation of body and mind, the author points out certain important stages in the progress of brain physiology. Constantin Varoli's belief that 'the mind of the animal resides in the substance of the brain' served as a stimulus toward efforts to localize brain functions. But the work of several generations of physiologists, whose chief contributions to their science were improvements of method, was completed before brain physiology really began to make progress. In the last third of the nineteenth century the silver method of Golgi and Cajal revealed structural facts which made possible the development of the present tendencies of neurology.

Pathology and embryology, especially the process of myelogenesis, and experiments with animals, have made numerous and invaluable contributions to our knowledge of the anatomy of the nervous system, its growth and significance. Comparative studies of the structure and functions of the nervous system have revealed facts concerning the brain cortex which render our knowledge of the relations of the various parts of the brain fairly satisfactory. These comparative studies uniformly indicate a parallelism between the structure of the nervous system and mental processes. Forms of mind, the author states, vary regularly with forms of brain. Although our knowledge of the details of this parallelism is incomplete,

the progress of comparative neurology has brought us nearer and nearer to the old, but perennially interesting, problem of the relation of mind and body. Indeed, Flechsig thinks that the recent work of comparative psychologists and physiologists far outweighs all previous work in its value for the solution of this problem.

The author is not blind to the fact that many philosophers and scientists contend that psychology is independent of brain physiology, and can gain nothing from it. He, in fact, quotes Wundt to this effect, and then proceeds to attempt to prove that the contention is not justified by the history and status of our knowledge of brain and mind. The history of the development of the individual, the physiology of the brain and the attempted correlation of physiological and psychological facts have done much, in Dr. Flechsig's opinion, toward the analysis of complex psychological processes. Voluntary acts are chosen by the author as material for discussion, because their relation to consciousness is most insistently before us, and also because, in connection with them, has arisen the view that brain physiology may contribute to our knowledge of mental life. Proofs of the importance of brain physiology for psychology are furnished,—granting the assumptions which are implicit in the whole of the author's discussion,—by the work of Broca on motor aphasia, of Fritsch and Hitzig on localization in the cortex and of similar work by a number of investigators.

The startling discovery of the existence of motor centers by Varoli, and the progress in the direction of the localization of brain functions, have been, in a sense, carried to completion by the work of Sherrington on the anthropoid apes. It has been found that the number of motor centers constantly increases as one passes from the simple to the more complex forms of brain. Their number and the degree of differentiation reached are far greater in the chimpanzee and gorilla than in any of the lower mammalia, and the statements of surgeons indicate that a still greater differentiation is to be found in man.

A review of the facts of specialization of function within the brain, as indicated by the investigations of many prominent physiologists, is neither necessary nor desirable for the appreciation of this article, and I shall omit, therefore, mention of all details. After stating that the movements of the extremities, for example, are due to the functioning of a particular portion of the cortex and that in this region of the brain we find certain large motor cells in connection with motor tracts, the author goes on to state that in these motor cells we have the very center of the organ of mind. Apparently he feels confident that the volitional process has been definitely located in the cortex. That many psychologists or physiologists will agree with this seems extremely doubtful. The above will serve as an illustration of the way in which Flechsig refers a particular form of consciousness to a limited region of the brain.

The facts of pathology and neural degeneration under experimental conditions show that only a small portion of the cerebral cortex is constituted by the sense spheres; the remainder Flechsig deals with under the three types of associational spheres which he has distinguished. Psy-

chology must lay stress upon the localization of sense impressions, and at the same time it must investigate the relations of the associational spheres to consciousness. In commenting upon the criticisms which have been passed on his contention that brain localization aids psychology, the author merely says that we must not begin with the wrong sort of question; that the facts speak for themselves; that he is convinced of the importance for psychology of the minute study of the brain with reference to the dependence of mental processes upon its functional activity; and that only further investigation of the subject is worth while.

The remainder of the article is concerned with the examination of our knowledge of certain motor and sensory defects which have been studied to advantage by brain physiologists, with the facts of ontogenic development in their bearing upon the subject in hand, and, finally, with the significance of studies of the phylogenetic series. In all of these facts the author finds something of value for psychology.

By way of general comment upon the article, it may be added that no one can deny that brain physiology is of more or less value to psychology if this subject be not defined as the science of the subjective fact. For those who contend that psychology is a purely introspective science, brain physiology can no more have value in advancing our knowledge of mental life than can the study of lower animals. Flechsig's article emphasizes certain of the important facts, physiological and psychological, which have been discovered by the researches of the brain physiologists, and indicates how they have influenced the study of psychic processes and modified psychological theories.

ROBERT M. YERKES.

HARVARD UNIVERSITY.

Stages of the Discussion of Evolutionary Ethics. T. DE LAGUNA. *Philosophical Review*, September, 1905. Pp. 576-589.

The discussions of the bearing of the theory of evolution upon ethics have passed through several fairly distinct phases. First, there was the problem of the validity of morality in view of an evolutionary theory of the world, but it was soon realized that moral experience remains what it is whatever view we may take of the relation of man to the lower creatures; evolution may be read as a leveling up as well as a leveling down. Next, there arose the question of whether the principle of the struggle for existence could be assumed as the principle of moral development. Against such a purely selfish reading of the social struggle as might be represented by a Nietzsche it was maintained either that (a) the biological struggle was not a purely selfish one or that (b) morality arises in opposition to this natural law of the lower life and does not profess to follow its principle. The third phase of the discussion is complex and difficult to characterize briefly. It is represented by Spencer, Stephen, and perhaps Alexander, who attempt to express moral experience in biological terms, maintaining that rational action brings with it no new functions or ends, but is valuable only as effecting a better adjustment to the older biological ends. The intelligent agent recognizes the value of

social cooperation, but only as a means to life. Accidentally connected with the thought of this group are the ideas of hedonism, of the transitory nature of the sense of obligation, of a completely evolved society and of the equivalence of good to more developed action.

The fourth phase concerns the value of social inheritance as a factor in the higher stages of evolution. With the recognition of this comes the relegation of the study of organic evolution to a very secondary place in ethics and the placing of a much higher importance upon the direct study of social and individual development, especially upon the latter. The specific character of moral development as the direct outcome of individual moral struggle thus receives adequate recognition. Finally, the problem now under discussion is the place and value of the genetic method in ethics. On the one hand is the claim that development throws no light on the moral question, since both good and evil are evolved and success is no test of value; on the other is the reply that the persistence of a moral sentiment in society must be considered as indicating its relation to social welfare and that the present can not be understood apart from its history. "The truth is that evolutionary ethics, as a peculiar variety or school, has almost ceased to exist. What has emerged from the half-century-long discussion is a method of research that is used, with more or less freedom, by almost every recent ethical writer of importance."

NORMAN WILDE.

UNIVERSITY OF MINNESOTA.

Ueber die Funktionen der Stäbchen und Zapfen und über die physiologische Bedeutung des Seinpurpurs. H. PIPER. *Medizinische Klinik*, Nos. 25-28, 1905. Pp. 19.

This is an admirable and concise summary of the experimental evidence for von Kries's theory of the function of the retinal rods and cones, the so-called *Duplizitätstheorie*. While the apparent fact that even the periphery of the retina responds with color sensation to sufficiently intense color stimuli may constitute a genuine difficulty for this theory, it must not be forgotten that the researches of Piper himself on dark-adaptation, quite aside from the experimental evidence offered by von Kries, seem to confirm the view, beyond any possibility of contradiction, that the retinal rods afford sensations of white light and the cones primarily of colored light. Piper finds ground for believing (p. 14) that even the cones of the extreme periphery are incapable of giving color sensations. The recent work of Trendelenburg has also confirmed the duplicity theory by showing that the spectral absorption-curve for visual purple that has been extracted from the retina is practically identical with the curve of gray values given by the spectrum to the dark-adapted eye.

If there should be any unfavorable criticism to make of this summary it would be that Piper perhaps minimizes the importance of the recent work of Nagel and Schaefer, which seems to show that the fovea itself is capable of a certain amount of dark-adaptation, which is more than a

mere recovery from partial exhaustion. If this fact is established it may have important consequences for the duplicity theory.

E. B. HOLT.

HARVARD UNIVERSITY.

JOURNALS AND NEW BOOKS

MIND. January, 1906, N. S., No. 57. *Contradiction and Reality* (pp. 1-12): BERNARD BOSANQUET. - "The purpose of this paper is to insist on the familiar view which treats negativity as a fundamental characteristic of the real; to exhibit this view in connection with one or two points in logical theory; and to insist that its value depends on the principle being pressed home in its full force." *Avenarius's Philosophy of Pure Experience* (I.) (pp. 13-31): NORMAN SMITH. - A valuable and interesting exposition and criticism of some of the fundamental doctrines of Avenarius, such as his distinction between subjective and objective, his theory of the relation of mind and brain, his materialistic intention and final unwitting testimony in favor of subjective idealism. *Psychology and Philosophy of Play* (I.) (pp. 32-52): W. H. WINCH. - "I discuss the psychology of play . . . perception and imagination in their bearing upon play, play as fictitious belief . . . play in language, play as art . . . philosophical theories of play, . . . summary . . . and a few educational corollaries." *Presentation and Representation* (pp. 53-80): HENRY RUTGERS MARSHALL. - A constructive criticism of the general theory that images are copies of impressions, and of the Herbartian view that mental presentations are conserved. The author defends the paradox that mental states occurring at different moments can have no identical parts or aspects. *Discussion: Truth and Consequences* (pp. 81-93): A. E. TAYLOR. - A trenchant criticism of pragmatism, followed by a rejoinder to Mr. Schiller's criticisms of the author. The author answers specifically and very effectively the reiterated challenge of the pragmatists to produce examples in which propositions are true without having any practical consequences. *Critical Notices*: J. A. Stewart, *The Myths of Plato*: JOHN BURNETT. D. G. Ritchie, *Philosophical Studies*: J. S. MACKENZIE. Mary Whiton Calkins, *Der doppelte Standpunkt in der Psychologie*: W. R. BOYCE GIBSON. *New Books. Philosophical Periodicals. Notes and Correspondence.* Mind Association: Directory.

THE PHILOSOPHICAL REVIEW. November, 1905, Vol. XIV., No. 6. *Appreciation and Description and the Psychology of Values* (pp. 645-668): WILBUR M. URBAN. - "Appreciation and description represent merely ideal limits of an antithesis which is never complete . . . all description involves some element of appreciation. . . . The purpose of the psychology of the worth consciousness is primarily interpretation. It can not dispense with functional categories, which, in the last analysis, are refinements of appreciative description." *The Psychological Self and the*

Actual Personality (pp. 669-683): J. A. LEIGHTON. - After pointing out the meagerness and inadequacy of the concept of the self adopted by psychologists of to-day, the author makes a not uninteresting plea for the systematic treatment of the self in so far as 'it is actualized and manifested in its individual reactions as a member of a historical culture.' *The Concept of Pure Experience* (pp. 684-695): B. H. BODE. - "I have tried to show that the concept of pure experience, instead of forming a proper datum for thought, has no standing-ground whatever. The new doctrine has done valiant service by its criticism of theories which relate sensation and thought in an external way." *Discussion: Radical Empiricism as a Logical Method* (pp. 696-705): GEORGE H. SABINE. - "The essential weakness of radical empiricism is that it attempts to develop a logic and metaphysics from a point of view which entitles it only to a psychology. It continues not only the method but the vice of English empiricism." *Reviews of Books: Die Philosophie im Beginn des zwanzigsten Jahrhunderts, Festschrift für Kuno Fischer, Band I.*: J. A. LEIGHTON. *Studies in Philosophy, Prepared in Commemoration of the Seventieth Birthday of Professor George Holmes Howison*: JOHN GRIER HIBBEN. Johannes Volkelt, *System der Aesthetik*, Band I.: JAMES H. TUFTS. George Simmel, *Kant*: WALTER G. EVERETT. *Notices of New Books. Summaries of Articles. Notes.*

Bastian, H. Carleton. *The Nature and Origin of Living Matter*. Philadelphia: J. B. Lippincott. Pp. 344.

Brotheren. *Kants Philosophie der Geschichte*. Helsingfors. 8vo.

Calderoni, Mario. *Disharmonie economica e disharmonie morali*. Saggio di un' estensione della teoria ricardiana della rendita. Florence: Francesco Lumachi. 1906. Pp. 110. 2 l.

Dehove, H. *Sur la perception extérieure*. Extrait de la Revue de Lille. Paris: Charrney, Arras. 1906.

Eisler, Rudolf. *Kritische Einführung in die Philosophie*. Berlin: E. S. Mittler und Sohn. 1905. Pp. viii + 470. 7.50 M.

Fouillée, A. *Les éléments sociologiques de la morale*. Paris: F. Alcan.

Hermant, P. *Les mystiques. Étude psychologique et sociale*. Paris: L. Cerf. 1905. Pp. 62.

NOTES AND NEWS

THE Section of Anthropology and Psychology of the New York Academy of Sciences met in conjunction with the New York Section of the American Psychological Association at Princeton University, on the afternoon and evening of February 26, at the invitation of the departments of philosophy and psychology of the university. The following papers

were read: 'Method in Esthetics,' A. L. Jones; 'Some New Points of View in the Psychology of Valuation,' W. M. Urban; 'A Psychological Theory of the Origin of Religion,' Irving King; 'The Detection of Color Blindness,' Vivian A. C. Henmon; 'Color Sensations and Color Names,' R. S. Woodworth; 'The Practise Curve as an Educational Method,' J. McK. Cattell; 'A New View of Mental Functions,' H. C. Warren; 'The Four Powers of Life,' D. S. Miller; 'The Nature of Judgment,' W. H. Sheldon; 'Reality as Possible Experience,' M. Phillips Mason; 'Misconceptions of Realism,' W. P. Montague.

THE 'Deutscher Monistenbund' has been organized in the Zoological Institute of Jena, with Professor Ernst Haeckel as honorary president. The first chairman is Pastor Kalthoff, of Bremen, and Dr. Heinrich Schmidt, of Jena, is general secretary.

LEAVE of absence for the second half of the academic year has been granted to Professor George S. Fullerton, of the department of philosophy of Columbia University, and Professor G. A. Tawney, of Beloit College, Wisconsin, has taken charge of Professor Fullerton's work during the latter's absence.

PROFESSOR GEORGE T. LADD is beginning his work as professor at Adelbert College, of which he is a graduate. He will give courses in ethics and the philosophy of religion at the State University of Iowa during the coming summer session; afterwards he will go to Japan for a year's stay, during which time he will lecture and study.

THE Western Philosophical Association will hold its sixth annual meeting at the University of Wisconsin, Madison, on April 13 and 14. Professor J. H. Tufts will preside.

PROFESSOR ROYCE gave a series of lectures on post-Kantian idealism before the department of philosophy of Johns Hopkins University during the mid-year recess.

IN honor of the forty-seventh birthday of Emperor William of Germany, celebrated on January 27, a Leibnitz medal has been established, to be awarded annually by the Berlin Academy of Sciences for notable scientific achievements.

MR. BENJAMIN KIDD delivered at the Royal Institution, on February 1 and 8, lectures on 'The Significance for the Future in the Theory of Evolution.'

THE Society for Philosophical Inquiry at the George Washington University is to give a public meeting on Spinoza, on March 6.

PROFESSOR GEORGE L. RAYMOND, formerly of Princeton, has been made professor of esthetics in the George Washington University.

VINCENZIO LILLA, professor of the philosophy of right at the University of Messina, died on the thirtieth of November, 1905.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

THE MORAL INDIVIDUAL

OUR experience may be graded in the following manner: sense-experience, the perception of objects, the presence of articulate ideas, and the awareness of self. The field of ethics is possible only in the last stage, for reflective self-consciousness is necessary to the rise of an ought.

The stream of consciousness moves along freely until it reaches the stage of thought. Here ideas present to consciousness distinct objects of choice. And the greater the conflict, the more intense the consciousness of self. It is not a conflict of these ideas, strictly speaking. Each one of these ideas reveals to consciousness some definite object, and through contrast with this object, consciousness is keenly aware of itself as a choosing and determining subject. It is not a question simply of something to be done. Were some one else to do the same thing, it might not be a question at all to this consciousness. No; it is a question of the self as doer and of the significance of the thing to be done for him. Experience has become self-conscious. It is in its own keeping. No one else can own this will. No one else can be just this self. And this is the essence of the feeling of individuality. It is the foundation of religion, of ethics and of all self-conscious initiative. Such an individual is his own center of reality. This birthright he can not sell. And just because he is such an individual he stands out absolutely unique. He is a reality duplicated nowhere else.

We can understand that famous discourse of the ancient Brahman hero who, although riding to war, confesses to his charioteer that it is only a question of casuistry who ought to be killed and who ought not. What philosopher including within his premises a balancing of *ego* over against *alter* has ever justly decided in favor of either? If he has, what are his grounds? What logic is there for self-denial, if my neighbor is simply one self and I another? You love us because we die for you! So much the meaner you: so mean that we think ourselves better, and live. He who runs can

not read the meaning of that Buddhahood that came from sacrifice of one's self to a hare. Either a doctrine can be followed out to its full or it ought to be given up. Was it not, therefore, the true Buddha who gave himself up? What else could a true Buddha do?

This problem is more serious than at first sight it appears to most students of ethical doctrine. Altruism is as irrational as a doctrine as egoism. And compromise, such as the greatest good of the greatest number theory, is only a makeshift. And there seems to be absolutely no way out. The subject, just because he is a subject, can not be a mere object. The will within is his own. And, therefore, just so far as he is a real individual he is independent of you and me. Mark the following from Hamlet:

Hamlet. Will you play upon this pipe?

Guildestern. My lord, I can not.

Ham. I pray you.

Guil. Believe me, I can not.

Ham. I do beseech you.

Guil. I know no touch of it, my lord.

Ham. 'Tis as easy as lying: govern these ventages with your fingers and thumb, give it breath with your mouth, and it will discourse most excellent music. Look you, these are the stops.

Guil. But these can not I command to any utterance of harmony; I have not the skill.

Ham. Why, look you now, how unworthy a thing you make of me. You would play upon me; you would seem to know my stops; you would pluck out the heart of my mystery; you would sound me from my lowest note to the top of my compass: and there is much music, excellent music, in this little organ; yet can not you make it speak. Why, do you think I am easier to be played upon than a pipe? Call me what instrument you will, though you can fret me, you can not play upon me.

Here, now, the whole thing is beautifully brought out. A person is real because he belongs to himself alone. He has music of his own. He has ideas that you may or may not get. He may lie; he may deceive. The key to his music is in his own keeping. If he so choose, you and I shall never so much as hear it. He is not an instrument played upon from without, but a life that comes forth from within. It is the eternal beauty and glory of the Brahman system that it brings to the front this—however incomplete—absolutely fundamental truth, that the self is not to be found within the world of objects, because it is, first of all, its own immediate world, in that it is subject. There is an inner world of our own subjectivity that is absolutely ineradicable. No matter what the particular content, whether Shylock's miserable ducats or St. Paul's moral will, this feeling, usually unconscious and almost always logically unjustifiable on the part of most people, is an ineradicable characteristic of selfhood. And moral insight is nothing else than

the being able not only to know—we all know it—but to feel that other individuals have this same kind of experience just as in-
 eradicably as we ourselves.

“When the object of feeling is great and complex, sensuous perception is impossible. Even with the feeling for a single personality this is so. A personality is never fully given in any single moment, or in any single situation. The feeling acquires an ideal character so soon as it seeks to embrace the personality in its totality and unity, which is as soon as it gets beyond the stage at which the object is only a means of personal gratification.” Just as one can have no proper conception of self unless one’s sensuous immediacy is apprehended as a moment in an ideal whole, so, as this fine passage from Höffding states, the ability to apprehend other selves implies this same process of idealization. Notice, we say ‘other selves.’ Other realities, as mere objects, as tools for our use, realities conceived as things, exist primarily for us. Another self, on the other hand, although it may be a means for us, must first of all exist as the fulfillment of its own ideas, not our own. It may well be that its own ideas and our own are fulfilled in common through one and the same will-act, this activity of will being either its own or ours; but it is because it is fulfilling its own ideas that the other self has chosen this part in common with us. This is the explanation of the seemingly paradoxical character of love, of altruism and of worship. Where this independence as end is degraded into means we have indeed not two selves but one, for the one has become a means to, and is lost in the other, and has as such ceased to be a self. If the self is the only end it is always so, and by what conceivable logic can one such self be sacrificed to another? The alter to whom this sacrifice is to be made is himself an ego: and so altruism is itself egoism under the cover of a sentimental terminology! If the selfhood of both alter and ego is not preserved, the personality of the one is wholly relative to that of the other, and quantity is supreme. If the self as subject is to be an end in itself, there can be no limit beyond which its quality of selfhood is degraded into quantity. But how can each individual person be an end in himself and, at the same time, unity in the world of persons be possible?

Every individual, just because he is an individual, must be a unique fact. Each individual is a reality which can be duplicated nowhere else. But this character of uniqueness is not peculiar to the human individual. Everything whatever possesses just this character. The beautiful gourd over which Jonah wept was just such a fact. The breath of the lily, the tint of the rose, is just such a fact. Those who lay stress on the indefinable character of the human individual can find an object of equal awe and wonder in

everything which exists. And further, exclusiveness is an accident of will; it is not its essence. If one love one's friends, it is not because one wishes to exclude others from one's affection. One's vote does exclude candidates not voted for, yet the aim of the vote is primarily not to exclude particular men, but to represent certain principles. A will which is indefinable is anything else but a truly self-conscious will. Only when the individual ceases its militant exclusiveness and becomes definable does it become positive. The little child, says Professor Baldwin,¹ not only notices that, as contrasted with things, persons are irregular in their actions, but he also notices that each one has his own regular kind of irregularity. Will is possible only when the stream of consciousness becomes an object to itself. And only so are individuals intelligible to each other.

In discussing the nature of the human individual there are two aspects to be noticed, and both must be treated with equal consideration. There is the aspect of instinct, impulse, heredity and all that makes for organization; and there is the aspect of intelligence, choice, will and all that makes for individuality.

Instinctive activity is not only first in order of time, it is more fundamental in the life of the organism. Will, individual choice, is the result of development; it is secondary and presupposes the realm of instinct and impulse as its foundation. When the optic mechanism of a newly hatched chick is stimulated by some object, the chick pecks at it instinctively. Some of the things it pecks at turn out to be bitter, some to be good. The sight of the former are associated with bitter sensations. Such objects come in time to be avoided. Here instinct is modified by individual experience. The chick, we say, reveals individual intelligence. The function of this individual experience is to modify, to inhibit and to guide instinctive activity.

Instinctive differs from reflex activity according to the extent of the organization involved. If the whole organism be involved, we speak of the behavior as instinctive; if only an incoming nerve, a ganglion and an outgoing nerve be involved, we have the typical reflex. Stout also speaks of the sensation-reflex. It is a form of impulsive activity set going by some sensation. Ideo-motor activity is a still higher form of mental activity. Every idea tends to carry itself into some active experience. But even here we do not have will, for the ideas carry themselves out mechanically, that is, without deliberation or choice. Now ideas are abstracts from the continuum of immediate experience, hence when called up even abstractly they represent some bit of experience. Impulse is stirred,

¹ "Mental Development," p. 126.

sometimes strong emotions are called forth by ideas. When, therefore, an idea representing or standing for some bit of interesting experience is inhibited by the presence of some other idea standing for its bit of experience, what happens? There is deliberation and there must be some choice before activity can result. This choice, this will, is itself an outgrowth of instinctive behavior. Will is dependent upon the fundamental processes of instinctive, reflex and ideo-motor activities. One does not choose to eat, although one may choose what particular things one will eat. One does not choose to live, although one may choose to live well. Will presupposes organization. One can will only what has been in some way first experienced. Learning to skate, swim or play tennis, like any kind of learning, is possible only by striking the proper activities and inhibiting the useless ones. A strong, enduring will is based upon some fundamental impulse; the idea comes in to guide, the original tendency to act. The idea lights up the way for the impulse.

The will is not coterminous with the individual self. It is the individuating aspect of the self, but instinct, impulse, the aspect of organization, is fundamental. Will is the wave, instinct the body of the stream. Will, therefore, and organization are not two contradictory facts. Each individual is himself an extremely complex organization. And the will is so far from being antagonistic to organization that it has its excuse for being wholly in the service of organized life out of which it has been evolved. When one idea is chosen rather than another, we have will. But each idea if left to itself would carry itself into conduct. This is so because all conscious experience is impulsive, motor. Will is never independent of organization. A willed act is always one of two or more impulsive tendencies which gets expressed through some idea. Plato's doctrine of the individual is the same as his idea of the state. Sense-experience corresponds to the laborers, reason to the thinking class and the will to the executive department. Each individual is an organization in himself. The primal characteristic of life is action. Ideation, reflection, is the product of development found only in man. When concepts are reached and actions take place in accordance with such concepts, we have voluntary conduct. But such conduct is not independent of its ground-plan, which is instinct, impulse and emotion.

As psychology, and particularly animal psychology, shows, instinctive behavior is the fundamental form of activity in all life. But instinctive behavior is a racial form of activity, and not the expression of individual experience. Instincts express the experience of the group, not that of the individual. And as instincts are primary and will secondary in the life of the individual, so in the

history of the group the social or instinctive is prior to the individualistic type of behavior. Virtues which are preeminently of social value are recognized first; virtues which are particularly individual in their significance are later. Will, self-consciousness, individuality, being a late development, the individualistic type of behavior does not exist in the early history of human life. The typical group life is seen in animals. Horses unite in common defense against an enemy. Wolves hunt in packs. Geese feed under the protection of a sentry.

If instinct is fundamental and will secondary, it follows that in primitive man the social instincts, such as we see in animals, were more fundamental than individual, voluntary actions. Only gradually did the individual will differentiate itself from the group. Such differentiation is the origin of man. It is the beginning of self-conscious will. The origin of man is synonymous with the differentiation of the individual will from the instinctive behavior of the group. In the animal no such differentiation takes place. His social conduct is performed instinctively. Man is an individual self. He distinguishes himself from, contrasts himself with, sets himself over against, his group. This may lead to real opposition between the individual and the group. Such opposition is coincident with the very existence of the individual will. As possessing his own will, man has a unique experience of his own individuality. But this is only one aspect of the human individual. Man has all the instincts of the animal. These instincts are the inescapable ties which bind him to his group, ties of family, social customs and religion. And it is the function of reason to get these fundamental instincts expressed in terms of will. Reason is not opposed to the instincts of the individual. The social instincts are fundamental in the individual; reason is an instrument evolved out of experience for its interpretation and further guidance.

Mr. Morgan, in his 'Habit and Instinct,' regards imitation as instinctive. The newly hatched chick comes to drink first by happening to peck at the water or through instinctively imitating the hen. But once experience is gained through instinctive imitation, later behavior is possible which is guided by individual experience. The resemblance of the imitative activity to the model gives pleasure. Failure means pain. "Instinctive imitation is thus an organic response independent of experience; intelligent imitation is due to conscious guidance, the result of experience, and based upon the innate satisfaction which accompanies the act of reproductive imitation."

Imitation plays an essential part in the development of the individual. It lifts the animal to the level of its species and the child

to the traditional level of its social group. Mr. Fiske has made us familiar with the meaning of what he has called the prolongation of infancy. It means the development of individuality. The individual animal, in so far as he is the creature of instinct, is largely fitted out early in his career with the means and ways of his behavior. In the child, on the other hand, there is comparatively little fixed response. His long period of growth makes possible his individual development.

The distinguishing feature in Baldwin's view of the self is that it develops, not through reflection, but through imitation; that its own individual sense of self is not first developed and is afterwards seen to develop on its social side. Through the innate tendency to imitation the child develops his own sense of self through imitating other selves. He does not mean that he has a knowledge of other selves before he knows anything of himself; he means that the child imitates others before he has any real knowledge either of himself or of others and that through this process of imitation he develops his own sense of self. The sense of self, therefore, fundamentally is just as social as it is individual. Baldwin's theory brings us back to the psychological position with which we began: that reflection and will are a late product of development, are secondary, and that impulse and instinct are primary in the development of experience.

The groundwork of the individual, reflective mind is the organized, instinctive life of the race. Will is secondary; instinct, reflex-action and impulse are primary. Abstract ideas are secondary; immediate experience is primary. What seems to be a will separated from the unity of life is merely an aspect, an individual phase of the total self. The will is not independent of instinct; its purpose is not to usher in a separation from the group, but to guide the organized life of the individual in its relation to the group. Will means individuality, but individuality does not mean exclusive independence. Will means that the organized totality of the self which earlier in the scale of evolution has been a matter of instinct is now partly in its own keeping. A share in the government of things is given over to the moral self, but because of the aspect of organization, the individual consisting of systems within systems, each is inescapably a member of his group. Will means control over relations, not independence of relations.

The movement of life prior to the appearance of human personality is continuously toward such an individual will. As we pass from the inorganic to the organic world and through the latter to man, we move from the more to the less general; we go more and more toward the particular. Mr. Spencer says that development is from indefinite homogeneity to definite heterogeneity. There is a

constant decrease of exactness as we pass from physics and chemistry on through the sciences of physiology, biology, psychology, ethics. Mathematics means less and less as we move along in the series, physical bodies, living organisms, individual minds. There is less and less universality, more and more differentiation, as we move through the spheres of physical law, plant life, animal instinct, human will. And within the human sphere development reveals increasing differentiation. The higher the civilization, the greater the individuality do we find in its members. In a gallery of rogues, it has been said, the individuals are more on a dead level than in a company of cultured gentlemen. Degeneration levels down our human individuality to the common level of instinct. Development, on the other hand, subordinates the general, the physical, the instinctive—the common to all—to the particular, will, choice—the distinctively individual. Herein is the separation of the human from the brute, the origin of freedom as contrasted with mechanical instinct. In short, herein is the origin of man.

But let us see what we have said. For we have traced development to a mere point. This free will, this individual, etymologically indivisible unit is so narrowed down that it has become a veritable abstraction. No such thing as a separate individual could exist. The human being has by no means ceased to be a member of the physical and animal worlds. And, besides, persons have a world of endless relationships, such as the family, the state, the church, of which the animal knows nothing.

The way out of this difficulty is not to get into it. And we shall not get into it if we do not regard the human individual as a separate, by-itself-existing reality.

The will is but the individual aspect of each individual self, which in other respects is as deeply grounded in the unity of life as any member of the animal world. But through a reflective, self-conscious will the self is partly in its own keeping. And this may lead, and commonly does lead, to an attempted separation from the unity of life in which the self is grounded. What differentiates the self from the world of nature, what makes it an individual, is the possession of a self-conscious will. But this does not unmake the unity which the self has with all the orders below it in the scale of life. At the same time it must be none the less an individual because of this underlying unity. The problem of human life, then, is to express in terms of will the fundamental unity of life which in the infra-human world is expressed in terms of law and instinct. Through the prism of thought the stream of life is individuated, differentiated into self-conscious wills. But the underlying unity remains. The problem is to get this deeper unity expressed through

and in these multitudinous wills. The instinct of sex expressed in terms of will is love. Upon this rests the institution of the family. The relationships with other beings, which in the animal world are controlled by more or less modifiable instincts, must be lifted into what has been called the world of appreciation, where they are voluntarily assumed. Upon this rests the state. The recognition of the source of life must be one of voluntary acceptance. Upon this rests the development of religion.

J. DASHIELL STOOPS.

IOWA COLLEGE.

ON 'FEELING'

I. In my judgment, we should gain in scientific accuracy and contribute toward progress were we to discard from our psychological and philosophical vocabularies the term 'feeling' altogether. 'Feeling,' like certain other terms constantly employed by psychologists and philosophers, among them 'consciousness,' 'perception' and 'sensation,' is unsuited for use in a scientific terminology. What has been said recently by Professor Perry and others regarding 'consciousness' may suffice so far as that term is concerned. As for 'perception,' most of us surely would join in the wish expressed by Professor Titchener in his St. Louis address, that the word 'perception' might be 'banished to the limbo reserved for unregenerate concepts and be replaced by a round dozen of concrete and descriptive terms.' As for 'sensation,' one who seriously strives to reach a definite, consistent and usable scientific meaning for that term will doubtless go through an experience somewhat like that which Professor Cattell related of himself at a meeting of the Psychological Association some years ago. As I recall his statement, it was that in his student days he and others took up with the late Croom Robertson the question, 'What is the meaning of sensation?' They continued their studies throughout an entire winter, meeting at Robertson's rooms fortnightly, and at the end of that time were no nearer a satisfactory answer than when they began. And no wonder, for the term means pretty much everything: with some, sensation is affective, the affective aspect of our mental reactions to sense stimuli; with others, it is not affective, but intellective (presentative); with others, among them Robertson himself, it is neither, but a *stage* of mentality below the rational and embracing conative as well as intellective and affective factors; and, not to prolong the list of meanings, with some experimental psychologists, no attempt is made to give the term any definite meaning at all. Now 'feeling,' with its many, and popular, connotations, is, like these other terms,

unsuited for scientific use, and only contributes to confusion instead of to clear thinking and scientific progress.

II. I am not, however, very sanguine that 'feeling' will be discarded altogether from our scientific vocabulary. I would remark, therefore, in the second place, that the meaning given to 'feeling' by the Associationists and by Mr. Spencer, Professor James and others seems to me to be especially unsatisfactory, and to be one which we can and ought to discard. These writers give 'feeling' the widest possible generic significance, and make it stand for every form of mental state, change or activity. This makes it equivalent to 'thought' as used by the Cartesians and as still used in such a phrase as 'the stream of thought,' and to 'idea' as used by Locke and as still used in the phrase 'association of ideas.' Now, of course, we must have such a generic term. But such a term should be as devoid of other and more specific connotations as possible; and surely 'feeling,' like 'thought' and 'idea,' is not. [For myself, I strongly believe that psychology and philosophy would be the gainers were we to follow the admirable suggestion made by Professor Huxley in his little volume on Hume and, in the interests of improved terminology, adopt the word 'psychosis' (with the adjective 'psychosial') as our generic term. Then we should have a strictly scientific and fairly unambiguous term for every mental state, change or activity, corresponding to the neurologist's 'neurosis' for any and every brain change or state.]

III. Assuming that we are to continue to use the term 'feeling,' it should be in the sense of 'affection' or 'affective psychosis,' terms much to be preferred to 'feeling' itself. Taking it in that sense, I would remark, in the third place, that I have never been able to accept the widely prevailing view which identifies 'feeling' with pleasure-pain or pleasantness-unpleasantness (Lust-Unlust). To say that all our feelings are constituted by elements of pleasure and pain and nothing else; that 'feelings *quâ* feelings are merely particular modifications of the agreeable or disagreeable'; that 'feeling as such has no quality, apart from the radical difference of the pleasant and the unpleasant' (Sully), seems to me to be due to imperfect psychological analysis or to philosophical preconceptions. More accurate and unprejudiced analysis shows, I believe, that feeling *as feeling* has quality as well as tone (intensity of pleasure-pain); that our feelings can be ranged along a scale as base or noble; that ideal categories and categories of value hold of them as affective states and not merely of the underlying or accompanying intellectual elements. With Stuart Mill, it seems to me absurd that while quality is considered as well as intensity in estimating all

else, the estimation of feeling should be supposed to depend upon intensity alone.

IV. The Wundtian tridimensional (or tridirectional) theory of the nature of feeling, that feeling takes three elemental forms or directions—pleasantness-unpleasantness, excitement-repose and strain-relaxation—which may be experienced in some cases independently of one another, does not seem to me to be sustained by the evidence, introspective and experimental. For example, I find no satisfactory evidence that there are states of feeling, whether called excitement-repose, strain-relaxation or by any other name, that are experienced wholly apart from pleasantness-unpleasantness; that is, that have no pleasure-pain shading or tinge. As for Wundt's second and third elemental characteristics or directions, excitement-repose (Royce's restlessness-quiescence) and strain-relaxation, I can not rid myself of the conviction that they are not feelings proper at all, but are effects or accompaniments, organic or mental, which are confounded with affective states proper.

V. Finally, while I am not prepared to accept Dr. Marshall's doctrine that 'feeling is the empirical ego which has not yet become explicit,' I find myself in full agreement with much of the psychological matter in his interesting paper and especially with the emphasis laid upon the characteristic of 'subjectivity' as of the essence of feeling. In Hamilton's well-known phrase, 'feeling is *subjectively subjective*.'

GEORGE M. DUNCAN.

YALE UNIVERSITY.

SOCIETIES

THE FOURTEENTH ANNUAL MEETING OF THE AMERICAN PSYCHOLOGICAL ASSOCIATION

THE American Psychological Association held its fourteenth annual meeting on Wednesday, Thursday and Friday, December 27-29, 1905, in Emerson Hall, at Harvard University, in affiliation with the American Philosophical Association. The meeting was one of the most successful in the history of the Association, in point of attendance and in the general interest in the program presented. The wealth of papers precluded the possibility of such discussion as would seem desirable at the meetings of the Association. The papers were grouped and distributed at the various sessions with a view to giving, as far as possible, unity to the program of each session. Wednesday morning was given over largely to comparative and abnormal psychology, Thursday morning to general psychology and Friday to experimental psychology, followed by a *conversazione*

and demonstrations of apparatus and methods used in the researches in progress at the Harvard Psychological Laboratory.

The president of the Association, Professor Mary Whiton Calkins, of Wellesley College, presided at all of the sessions. At the opening session on Wednesday, Professor G. V. N. Dearborn, of Tufts College, first presented a paper on 'The Relations of Muscular Activity to the Mental Process.' Professor Dearborn held that there was no ground for the universal acceptance of brain protoplasm as the sole physical correlate of mind and suggested the claims of muscle protoplasm to be considered as representing a partial, and it may be the more important, correlate of the mental process. The various properties of muscle protoplasm satisfy the criteria of correlation better than does the cerebral cortex. Dr. Irving King's paper, 'How can the Relation of the Conscious to the Subconscious be Best Conceived?' was a criticism of the conception of consciousness after the analogy of the visual field. Consciousness is best conceived as a point correlated with a certain degree of organization of neural processes. The point of consciousness is modified by outlying neural processes and dispositions which in a vague way affect the movement of the central organization. These outlying neural processes and dispositions are the subconscious. The five following papers were devoted to comparative psychology. Dr. Robert M. Yerkes reported the results thus far obtained in a study of 'The Senses and Intelligence of Japanese Dancing Mice.' These mice appear to be degenerate forms. Tests of the various senses and of ability to discriminate and learn have yielded almost entirely negative results. Dr. J. P. Porter, of Clark University, presented two papers, one being a brief report of a 'Further Study of the English Sparrow and other Birds,' the other on 'The Habits and Instincts of Spiders, Genera *Argiope* and *Epeira*.' The first was a study of the learning-process in a vesper sparrow, a cow-bird, four English sparrows and two pigeons, with notes on individual differences. The second paper, illustrated by the stereopticon, showed the great variability in the web-spinning instinct of spiders as to the selection of a place for the web, and, in the case of those that build one, of the nest and its material. Variations in time of spinning, in adaptations in feeding habits, variability in courtship and evidences of intelligent control were discussed. Professor Wm. Harper Davis followed with a discussion of 'Variations in the Nests of a Spider, with a Comment on the Measurement of the Variability of Instincts.' Professor Davis exhibited a series of nests of another species of spider which binds grass or sedge blades to form boxes for the protection of its eggs, and discussed the variations and their causes. The marked individual differences which appear probably represent variations in instincts and

adaptations to unusual conditions. It was pointed out that a study of such variations may furnish an objective measurement of variability in instincts, if the numerous other factors which are undoubtedly present can be eliminated. Considerable interest attaches to these preliminary discussions in view of the fact that it is usually held that variability in instincts can not be determined quantitatively. Professor William Morton Wheeler's paper on 'The Ant Queen as a Psychological Study' indicated the great psychological changes which take place at the various stages in the life history of the ant queen. The striking contrast between the ant queen and the queen honey-bee was interestingly set forth. The queen honey-bee is a degenerate, a mere reproductive machine; the ant queen is a perfect exemplar of the species, taking up vicariously most of the characteristic functions of the workers. The three succeeding papers dealt with some of the problems of abnormal psychology. Dr. E. Cowles's paper on 'Conscious Experiences and the Somatic Group of Senses' called attention to the importance of the somatic group of senses for psychiatry, which has hitherto concerned itself largely with the motor aspects of mental life and expression to the neglect of the inner sensory field. The somatic sensations are added to the experiences from the physical group of senses to the outer 'life of relation' and exert a controlling influence upon the mind; hence the importance of their study. In a paper on 'The Nature of Hypnotic and Post-Hypnotic Hallucinations,' Dr. Boris Sidis questioned the validity of the hypnotic hallucination and the central origin of hallucinations. Experiments and observations on many subjects tend to prove that hypnotic or post-hypnotic hallucinations are neither peripheral nor of the alleged central origin, but are spurious in character, in a word, delusions. Dr. Morton Prince's paper on 'The Psychology of Sudden Conversion' gave a report of a case of sudden conversion similar to the Ratisbonne case discussed by Professor James. By putting the subject into two different hypnotic states the processes antecedent to the crisis were discovered. The subject had gone into a trance during which various dream states connected with ecstatic emotions had developed. The persistence of the ecstatic emotions after waking as a state of exaltation accounts for the conversion. There was accordingly no incubation of ultramarginal or subconscious ideas as James's theory holds.

After the adjournment of the session, the members of the Association were entertained at a luncheon given by the Harvard Corporation at the Harvard Union.

Inasmuch as this meeting was the occasion for the formal opening of Emerson Hall, the new building at Harvard devoted to philosophy and psychology, special dedicatory exercises were held on Wednesday

afternoon, Professor Münsterberg, chairman of the department of philosophy, presiding. Addresses were made by President Eliot and Dr. Edward Waldo Emerson. Following these exercises there was a joint discussion with the American Philosophical Association on 'The Affiliation of Psychology with Philosophy and with the Natural Sciences,' Professor Dewey, president of the Philosophical Association, presiding. The participants in this discussion were Professors Münsterberg, Frank Thilly, James R. Angell, A. E. Taylor, Wilhelm Ostwald and President G. Stanley Hall. Professor Münsterberg strongly contended for the affiliation of psychology with philosophy as typified in Emerson Hall. He urged the immeasurability of mental phenomena and the impossibility of applying to them the methods of the natural sciences. President Hall as warmly contended for the affiliation with the natural sciences. Psychology is 'a description as accurate as may be of all those facts of psychic life, conscious and unconscious, animal and human, normal and morbid, embryonic and mature, which are demonstrable and certain to be accepted by every intelligent, unbiased mind which fully knows them.' The best principle of organization of these facts is evolutionary. "Psychology is excluded from no field of experience, inner or outer, or of life, conscious or unconscious, religious, social, genetic, individual, that can be studied on the basis of valid empirical facts." Its closest allies are to be biology, physiology and anthropology. Professor Thilly insisted that the fact that mind can be studied in connection with matter does not make psychology a natural science. Psychology is concerned with a unique body of facts, and a knowledge of their material antecedents would not give a knowledge of mind as such. That psychology is a natural science because it employs the methods of science is also untenable. Professor Angell urged the affiliation with both philosophy and the natural sciences. Psychology has a philosophical lineage and certain highly important philosophical foundations. On the other hand, in many of its methods and ideals it approaches the position of the natural sciences. Professor Taylor held that the affiliation of psychology is with the natural rather than with the philosophical sciences. Psychology is dependent upon empirical premises based upon the testimony of direct perception, and hence resembles the empirical sciences. The fact that it is concerned with 'individual objects' and non-quantitative processes does not make it the less a natural science. Moreover, it makes no use of the concept of ideal norms of value.

On Wednesday evening President Calkins read her address on 'A Reconciliation of Structural and Functional Psychology.' The abstract of this address is here reproduced in full.

"Psychology is the study of the conscious self. Not the psychic

event—the mental process or idea—is the basal fact of psychology, but the self from which every psychic event is a mere abstraction. This self of the psychologist must be sharply distinguished, first, from the philosopher's self, the object of metaphysical study; second, from the biologist's self, the animal body which 'has consciousness,' and, finally, from the sociologist's self, the self regarded as member of a community.

"The scientific study of the conscious self involves two essential procedures: first, the analysis of its consciousness into structural elements, sensational, affective and the like, and, second, the enumeration and classification of its relations with its environment, that is, with other selves and with objects. The first of these procedures is the distinctive feature of structural psychology; the second is the fundamental motive of functional psychology. The essentials both of structural and of functional psychology are, thus, combined in psychology as study of a self; for this self is both a complex of elemental experiences and a complex of relationships to its environment."

Immediately after the address the members of the Association were entertained at a reception at the home of Professor and Mrs. Münsterberg.

The Thursday morning session began with an interesting 'Discussion on the Definition of Feeling.' The discussion was opened by two papers on this subject; the first by Dr. Henry Rutgers Marshall, the second by Professor H. N. Gardiner. Dr. Marshall called attention to the various uses of the term feeling to designate (1) touch, (2) the organic sensations, (3) emotion, (4) pleasure-pain and (5) mere emphatic experience as such. Feeling can be identified with no one of them. The emphatic characteristic of all experiences which are described by the word is found in 'subjectivity.' "Feeling proper is a certain vague mental form which when more clearly defined develops into the empirical ego of self-consciousness. Feeling is thus the empirical ego which has not yet become explicit." Professor Gardiner's examination of the various meanings of the term, as commonly used and which the psychological use of the term should cover as far as possible, led to the following definition: "Feeling may be defined as the immediate consciousness of the modification of the individual experience, as such; a feeling, as the content of consciousness, however constituted, regarded as the immediate modification of such experience." A set discussion followed the reading of the papers, the general trend of which can only be briefly indicated. Professor Angell held that subjective reference must be the most important element in any definition. Feeling must be defined more or less arbitrarily. If it is to have psychological status, emphasis

must be placed on its subjective character and in what this consists. Professor Duncan was of the opinion that there would be a gain in accuracy and in scientific progress by discarding the term feeling entirely as unsuitable for a scientific terminology. 'Affection' or 'affective psychosis' are better terms, being free from popular connotations. The essence of feeling lies in 'subjectivity'; feeling is 'subjectively subjective.' President Hall considers that it is entirely delusive to attempt to define feeling. Definitions are the last product of development. Knowledge and description of the facts is the important thing and the best possible definition. If feeling must be defined, the definition must cover the whole of mental life. Consciousness as in strong feeling is subordinate to feeling. Feeling is wider and older genetically than intellect or will. Professor Washburn suggested one of the most specific definitions as follows: "Feeling in its broad sense may be defined as the unanalyzed and unlocalized part of consciousness." It is necessary to distinguish between processes which are not analyzed or localized at a given moment because they are not in the focus of attention, processes which are not normally analyzed or localized, such as the organic sensations, and processes which resist all analysis and localization. Professor Judd criticized the ascription of vagueness to feeling. Feeling is vague only when the attempt is made to submit it to the categories of cognition. It has a distinctness and clearness of its own. 'Attitude' is one of the essential constituents of every mental state and this term characterizes better than feeling its subjectivity, universality and relation to the empirical ego.

The two papers which followed were on Attention; the first by Professor William H. Burnham on 'Attention and Interest.' Attention and interest are to be regarded as different aspects of the same process. Attention is a reaction of the whole organism comparable to the tropisms, while interest is the affective state correlated with this reaction. "The feeling of the organic adjustment in attention is the interest." The second paper, by Dr. J. P. Hylan, on 'Excursive Attention,' was an argument, based on the impossibility of a simultaneously divided attention and on the rapidity of mental fatigue, for the use of the term 'excursiveness' to characterize the wandering or shifting of direction in the varying states and degrees of attention. This excursiveness may be either of the reflex type, as in perception, or conscious and voluntary, as in adjustments to various complex conditions of life. Professor I. Madison Bentley's paper on 'The Psychology of Organic Movements' was a systematic analysis of the treatment of organic movements in psychologies. The motor elements where they enter in as primary factors in mental life may be referred to the general psychological system or subsumed under some

single motor theory. 'Motor' theories are of two general types; the first type emphasizing the motor conditions of consciousness, the second the motor consequences. The paper was a plea for a more careful study of the psychology of 'coordination' and 'adjustment' and the conscious activity which seems to be its primary postulate. Professor Stratton's paper on 'Modified Causation for Psychology' was deferred until Friday morning. Professor Stratton urged that 'concomitant variation' might well be taken as the chief criterion of causation in psychology without requiring quantitative equivalence or qualitative continuity. Psychology need not feel bound to accept the idea of causation of physics any more than philosophy.

At twelve o'clock Professor Wilhelm Ostwald addressed the Association on 'Psychical Energy.' Professor Ostwald maintained the possibility of extending the concept of energy so as to include mental as well as physical facts. Just as every physical fact can be best described by defining the kind and magnitude of energy involved in it, so there seems to be no contradiction in considering psychic facts also as being the results of transformations of energy of some sort. This energy may be unique in kind or the combination of two or more energies. If we knew the exact amount of energy contained in the human body at any instant, the transformation of energy resulting from a mental process at the next succeeding instant which did not appear in any other known form would constitute psychic energy. The theory proposed has a distinct advantage over psychophysical parallelism, providing as it does for a functional relationship between the mental and physical worlds. Following the address of Professor Ostwald there was a general discussion participated in by Professors Royce, Ladd, Hibben, Marvin and President Hall.

After the business meeting of the Association in the afternoon, there followed a conference on the subjects, 'Cooperation between Laboratories and Departments of Different Institutions' and 'Elementary Instruction in Psychology.' Professor Judd opened the discussion with a paper on the first topic. He held that each laboratory must determine its own problems and methods, and that in this respect cooperation was impracticable. It would be profitable, however, for laboratories to cooperate in matters concerning apparatus and in the publication of psychological results. The division of the Association meetings into sections for the more thorough consideration and discussion of particular papers and problems is desirable, and at the general meetings more discussion of methods and courses of instruction. Professor Sanford outlined a 'Sketch of a Beginner's Course in Psychology.' The subject-matter of the course suggested, which must begin with what is closely

related to the habits of thought and interests of the students, might be included under the following topics and in the following order: (1) Psychology of Learning and Acquisition; (2) Psychology of Truth and Error; (3) Psychology of Emotion; (4) Psychology of Personality and Character; (5) Facts of the Interdependence of Mind and Body; (6) Psychogenesis; (7) Systematic Psychology. In the general discussion which followed cooperation between psychological laboratories and hospitals for the insane and feeble-minded was emphasized by several speakers. There is here a wealth of opportunity which university laboratories have not availed themselves of. Cooperation in mutual criticism of psychological results was also suggested. The discussion of elementary instruction emphasized the importance of concreteness in subject-matter, the necessity of experimental demonstrations and laboratory work and the shortcomings of the lecture method of instruction.

The address of the president of the Philosophical Association, Professor John Dewey, on 'Beliefs and Realities,' occupied the evening session. This was followed by the smoker of the two Associations at the Harvard Union. The lady members of the Associations were entertained at the home of Professor and Mrs. Royce.

The papers read at the Friday morning session discussed various problems in the psychology of vision, the first three dealing with color vision, the remaining four with eye movements and related mental processes. Professor Will S. Monroe reported the results of experiments on the 'Color Sense of Young Children.' Tests had been made on 400 children between the ages of three and six in the matching and naming of colors and in color preferences, single and in combinations. Sex differences were not marked. The standard red was at all ages oftenest matched, named, preferred and used in color combinations, with blue second. Marked individual differences appeared. Dr. J. W. Baird, in a paper on 'Primitive Color Names and the Primary Colors,' summarized the arguments which have been made to prove the color-blindness of the early races of mankind and the evolution of the color sense in the spectral order from red to blue. Both conclusions were held to be erroneous. The phenomena of color-blindness and of indirect vision support the view that the color senses were developed in pairs in the following order, black and white, yellow and blue and, finally, red and green. Dr. Kate Gordon reported 'A Study of After-images on the Peripheral Retina,' based on experiments made by herself in conjunction with Dr. Helen B. Thompson in the Mt. Holyoke Laboratory. The influence of back-grounds of varying brightness on the color-tone of the after-image and on the stimulus-color was indicated. The striking result was obtained that a subliminal color stimulus may produce a

supraliminal after-image of appropriate color-tone. Finer discriminativeness was shown in the red-yellow end of the spectrum than in the blue-green, both in the stimulus and in the after-image.

Of the papers on eye movements, Professor C. H. Judd's on 'Photographic Studies of Convergence' brought out the fact that in the movements of convergence the two eyes move at different rates. In divergence the differences in rate of movement are not so marked. A sympathetic lateral movement, on the part of the eye which converged more slowly, in the direction of the movement of the other eye was frequently noted. "These facts show that even in fully developed adult convergence the movement is not wholly automatic and independent of the retinal images which arise during the movement." Professor Robert MacDougall reported an investigation 'On the Influence of Reflex Stimulations to Eye Movement upon Judgments of Number.' Comparative estimates of two groups of stimuli simultaneously presented, one of which was arranged with a view to producing a greater reflex stimulus than the other, seemed to show that the estimates were affected by such arrangements, though no quantitative results were obtained as to the various factors involved. Professor Edwin B. Holt presented a paper on 'Vision during Dizziness.' The nystagmic movements of the eyes during dizziness are slow in one direction and more rapid in the other. The speed and extent of these movements were measured. The rapid movements allow no visual sensations to reach consciousness, while the slow do. This accounts for the movement of the visual field in one direction during dizziness. The rapid movements are held to occasion or occur concomitantly with a 'central anesthesia.' Professor R. S. Woodworth, in a paper on 'Vision and Localization during Eye Movements,' maintained that vision during 'eye-jumps' does not differ essentially from vision with the resting eye, given the same retinal stimulation. The principal evidences adduced in favor of this view were, that if by movement of a mirror the field of view is shifted past the fixed eye, the same appearances are observed as in eye-jumps; and that a clear image thrown on the retina during an eye-jump by an object moving in the same direction is correctly localized in space and not as an after-image, as the theory of 'central anesthesia' would suppose. Moreover, the reaction-time to an object so seen is not long enough to include any considerable period of anesthesia or inhibition. Following Professor Woodworth's paper there ensued a discussion of visual consciousness during rapid eye movements which was continued into the afternoon session.

The first paper read in the afternoon was by Professor E. A. Kirkpatrick on 'Growth of Vocabularies.' This was a preliminary re-

port on the size of vocabularies, from the second grade to the university. A hundred words, selected by chance from the dictionary, were marked as 'known,' 'unknown' or 'doubtful.' It was suggested that this test might serve as a measure of the general intelligence of pupils. Professor C. E. Seashore's paper on 'Training in Singing by Aid of the Voice Tonoscope,' described various recent improvements in the tonoscope. Tests by this instrument were reported, showing that training for accuracy in control of the pitch of the voice in singing progresses much more rapidly and may reach a higher degree of efficiency than training without it. "It was also demonstrated that the least producible change in the pitch of the voice, in the different parts of an octave within the middle range, is a constant fraction of a tone." Mr. Frederic Lyman Wells, of Columbia University, reported some of the more important results from a study of 'Linguistic Lapses.' Linguistic lapses are always involuntary, central, not necessarily conscious, and referable to a physiological basis. They fall into five general types, the assimilation, the dissimilation, the omission, the substitution and the metathesis. Various general conclusions, on a basis of a comprehensive study of the lapse, were drawn concerning these types and their causes and concerning the relations of sensory and motor lapses. Mr. Wells holds that the study of lapses substantiates the view of individual localization for individual motor linguistic elements. Dr. Charles T. Burnett's paper on a 'Comparison of the Maximum Rates of Actual and of Imagined Voluntary Rhythmic Muscular Movement' brought out the fact that the maximum rate of imagined rhythmic movement is much smaller than that of the corresponding actual movement. Practise effect was found to be greater with the imagined movement. Variability is greater with the actual movement. The relation of these results to the classical theory of volition was pointed out. Dr. J. P. Hylan gave a demonstration of 'A New Kymograph,' following which the last paper on the program was read, by Dr. J. E. W. Wallin, on 'Investigations on Rhythm, Time and Tempo.' The limens of rhythmical interval were found to follow approximately the Weber-Fechner law. The time limen, which is lower than the rhythm limen, is relatively lower for the longer intervals. Preferred tempos as determined by the method of paired comparisons average about half a second.

In addition to the papers read at the meeting, the following were read by title: 'The Doctrine of Specific Energies,' by Mrs. C. Ladd Franklin; 'Visual Adaptation in Tachistoscopic Experimentation,' by Professor John A. Bergström; 'The Possibility of Retinal Local Signs of the Third Dimension,' by Dr. W. P. Montague; 'A Simple Method of Measuring Relationships,' by Professor E. L. Thorndike;

'Sex Differentiation in the Sense of Time,' by Professor Robert MacDougall; 'Some Psychological Aspects of Success,' by Brother Chrysostom; 'Early American Psychology,' by Professor I. Woodbridge Riley.

At the regular business meeting the following officers for the year 1906 were elected: *President*, Professor James Rowland Angell, University of Chicago; *Members of the Council*, Professor Mary Whiton Calkins, Wellesley College, and Professor C. E. Seashore, University of Iowa.

The following new members were elected: Dr. Elizabeth Kemper Adams, Smith College; Professor Bird Thomas Baldwin, West Chester Normal School, West Chester, Pa.; Dr. J. Carleton Bell, Wellesley College; Mr. Edward Herbert Cameron, Yale University; Mr. Donald John Cowling, Yale University; Dr. Kate Gordon, Mt. Holyoke College; Professor Edmund B. Huey, Western University of Pennsylvania; Professor Charles Hughes Johnston, State Normal School, East Stroudsburg, Pa.; Dr. Irving King, Pratt Institute; Dr. Adolf Meyer, New York State Pathological Institute; Dr. Naomi Norsworthy, Teachers College, Columbia University; Dr. James P. Porter, Clark College; Dr. Morton Prince, Tufts College Medical School; Miss Margaret S. Pritchard, Philadelphia Normal School; Dr. James Putnam, Harvard Medical School; Dr. Eleanor Harris Rowland, Mt. Holyoke College; Professor Henry A. Ruger, Colorado College; Dr. Boris Sidis, Brookline, Mass.; Dr. Theodate L. Smith, Clark University; Professor Edward G. Spaulding, Princeton University; Professor Herman Campbell Stevens, University of Washington; Professor Herbert Stotesbury, Temple College, Philadelphia, Pa.

It was voted to accept the invitation of Columbia University to hold the next annual meeting in New York, in affiliation with the American Association for the Advancement of Science and the American Society of Naturalists.

VIVIAN A. C. HENMON.

COLUMBIA UNIVERSITY.

REVIEWS AND ABSTRACTS OF LITERATURE

Ueber Musikalische Einfühlung. H. LIEBECK. *Zeitschrift für Philosophie und Philosophische Kritik*, Band 127, Heft 1. Pp. 1-18.

This article is a further addition to the rapidly growing literature on the subject of *Einfühlung*, or esthetic sympathy. Its aim is the examination of *Einfühlung* as it occurs in music and the application of the results of this investigation to the general problem. The author holds that music gives us a more or less definite picture of our own feeling life uninfluenced

by the accidents of real life, and hence in a kind of ideal purity. Music thus becomes for us an idealized *analogon personalitatis*,—a favorite term with this author. These feelings are not aroused in their full reality, though this may sometimes happen. But in the esthetic experience music presents us with *images* of feelings; these pictured feelings do not lead to action or willing. The feelings in question may be those with which we are familiar, though many namable ones, such as envy, jealousy, embarrassment, etc., can not be produced, and others for which we have no names may be brought about.

Music expresses not simply the dynamic side of feeling, changes in intensity, etc., but feelings which are qualitatively different; and this is not merely by virtue of the association of tones and their relations with form qualities: it can arouse them directly.

In every perception there are two moments, one subjective, *viz.*, the feeling tone of the perception; the other objective, its cognitive aspect. In esthetic as opposed to other perceptions these two are approximately in equilibrium. This is closest in the perception of a human personality: feeling and objective qualities are combined in one object. The esthetic object is analogous to this and is thus something which is felt to be akin to ourselves, something which we can enter into, in short, something in whose presence we experience this *Einfühlung*.

If I understand the author's meaning aright, there is first what might be described in the language of Professor Santayana and Dr. Thomas Brown as 'the objectification' of the feelings which the object arouses, except for the fact that the feelings are still thought of as feelings and not as qualities. These objectified feelings are united with the qualities of the object and seem to belong to it, to be its feelings. Hence it becomes a quasi-conscious being, and this allows us to enter into sympathy with it or even to identify ourselves with it. All of which may be true sometimes, but as Mr. Wernaer has recently pointed out in the same journal, it does not describe all esthetic experiences or even those that are most frequent.

Music, as we have seen, is endowed with the power (or so our author maintains) of picturing for us certain feelings. Other arts can do this only indirectly, through the medium of objects and ideas of objects: music does it directly. With other arts there is a fourfold process, sensation, perception of an object, feeling on occasion of this perception, *Stimmung*. In music the second member of this series is omitted, the feelings are pictured directly. This can be accomplished in a measure, though very imperfectly, in combinations of pure line and color. And music may employ discursive relations, but in general it produces its effect through intuitive relations, and the other arts work through discursive relations. We can get at the spirit of a painting or poem only after getting its various parts, just as we know an object only after getting its various qualities and relations; only after these latter processes have occurred can we really become intuitively aware of the object, while the spirit of music is intuitively grasped from the beginning.

The author maintains that Schopenhauer's distinction, on metaphysical

grounds, between music and the other arts is unnecessary and also too subjective. In all arts the essential thing is that the natural object no longer seems to belong to a strange world. This has a metaphysical ground, which is the same for all arts. Music is peculiar simply in the degree of immediacy with which this effect is produced.

The article closes with a brief discussion of the qualities which constitute a musical as distinguished from an unmusical nature in man. The possession of the audible or motor type of imagination is the first of these. To this must be added the capacity to represent the world of feeling in an immediate pictorial manner by means of tones, and also the need of overcoming in this way the duality and opposition of appearance and nature. The article is by no means easy to interpret. The author's style is none of the clearest and some of his positions would have been improved by further exposition. The whole thesis that feelings can be really pictured seems to the reviewer to demand further analysis and justification.

ADAM LEROY JONES.

PRINCETON UNIVERSITY.

The Practical Deductions of the Theory of Knowledge. D. H. MACGREGOR. *International Journal of Ethics*, January, 1906. Pp. 204-227.

The 'practical deductions' here discussed relate to the assumption of teleology and the consequent optimism; the theory of knowledge presupposed is that of Professor Ward's 'Naturalism and Agnosticism,' which has for its main position "the substitution of the 'duality of matter and spirit' for the 'dualism' of science and common sense."

Mr. MacGregor first deals with the presuppositions of teleology, finding them summed up in a certain coincidence between nature and thought, which in turn implies dualism, or at least the absence of necessary agreement. "In order that there may be a teleological interpretation, processes must coincide which are inherently distinct. But idealism does not grant the distinctness of thought and nature. According to it, these two in inseparable union constitute reality. But we may not condition reality" (p. 209). "We are entitled, therefore, when we see the demonstration of this unity by the idealists, to take them at their word; and, since the twin poles of the magnet are quoted as analogous to the relation of thought and nature, to ask whether it would be allowable to treat the positive and the negative poles as teleologically adapted. It belongs to the nature of the case. They could not exist otherwise than as they do. There is no contingency, but inherent and thoroughgoing interdependence between them."

After thus disposing of 'formal' teleology, the author addresses himself to the assumption of a more concrete teleology expressed in the phrase that 'nature is amenable to human ends.' He points out the want of logical connection between the two kinds of teleology. The latter, in so far as it is demonstrable and has real significance, is not so much a matter of epistemology as of ethics. The argument at this point is, however, of such a nature as not readily to admit of summary statement. Suffice it

to say that the incongruity between the implications of the psychology of effort and the epistemology of idealistic monism of the absolutist type is clearly brought out.

We have here an acute and conclusive criticism of the teleological doctrines of idealism. The problem of teleology is, however, only a single aspect of the comprehensive question as to the one and the many confronting the monist who regards the one as absolute and the many as relative. This is as true of the materialist as of the idealist. The terms being correlative, both must be regarded either as fixed or as functional. In default of a definite pronouncement or of a knowledge gained from other sources, one naturally tries to read between the lines to divine the author's own position. So largely critical is this study that the conclusion is not clear. There is, however, much that might be taken to indicate sympathy with the views of the pragmatists.

W. A. HEIDEL.

WESLEYAN UNIVERSITY.

La Conscience. PAUL HERMANT. *Revue de Philosophie*, November, 1905. Pp. 495-511.

The thesis of this article is that consciousness corresponds to the activity which marks the development or the regression of the psychical life as a whole. Consciousness is the realization of a new equilibrium, a synthesis of the new with the old, or the process by which a new psychical state establishes connections with the 'unconscious' or subconscious psychical mass which is in the background and which represents our anterior attainments or *l'ensemble du moi*. It appears, then, that consciousness is a function of the psychical life as a whole. The subconscious is constituted by states which, for various reasons, necessitate no readjustment of the psychical whole and which for this reason fail to establish the associations required for recall in memory. But the author offers no suggestion as to the nature of the subconscious, beyond the vague statement that it differs from the conscious only in degree, nor does he at any point take account of the possibilities of interpretation in terms of neural processes.

B. H. BODE.

UNIVERSITY OF WISCONSIN.

JOURNALS AND NEW BOOKS

THE MONIST. January, 1906, Vol. XVI., No. 1. *On the Form and Spectrum of Atoms* (pp. 1-16): FERDINAND LINDEMANN. - It is known that the distribution of spectral lines in the spectrum of any gas is a function of the form, density and elasticity of the atoms of that gas. The inverse problem of determining the form of an atom from a knowledge of its spectrum is possible in certain comparatively simple cases. The author illustrates by means of diagrams the probable shape of certain atoms and the structure of the molecules in which they are combined. *Manifestations of the Ether* (pp. 17-31): W. S. ANDREWS. - A

popular account of the ether of the electron as an ether vortex, of the atom as a congeries of electrons and of radioactivity. *Heredity and the Origin of Species* (pp. 32-64): DANIEL TREMBLY MACDOUGAL. - An elaborate and valuable exposition of the origin of species by hybridization and, more particularly, by mutation. Most interesting, perhaps, is the author's account of some experiments of his own, in which, by the intervention of external agents during the critical period, he induced mutations in a species not hitherto active in that respect. *Mathematical Emancipations. The Passing of the Point and the Number Three: Dimensionality and Hyperspace* (pp. 65-84): CASSIUS J. KEYSER. - Defining n -dimensionality as that feature of any assemblage whatsoever, in which, to distinguish an element, it is necessary to know n facts about it, the author proceeds to show that by taking the line or plane or circle as an element, spaces which are ordinarily regarded as having three or less dimensions may be regarded as having four or even more dimensions. The author closes his paper by suggesting that by becoming very familiar with the properties of a four-dimensional space of points we may possibly gain a *quasi* intuition of it. *Fechner's View of Life After Death* (pp. 84-95): EDITOR. - The author takes this occasion to expound and defend his own view of immortality as consisting in the preservation of an individual's ideals in the minds of those who live after him. Incidentally, he declares Fechner's conception of individual immortality to be fantastic and wholly unsupported by any evidence. *A Scientific Sketch of Untruth* (pp. 96-119): G. GORE. - A rambling account of the view that man's mind and will depend upon the material universe and its mechanically necessary laws. *Criticisms and Discussions: Haeckel's Theses for a Monistic Alliance* (pp. 120-123): P. C. - The author condemns Haeckel's theses as being likely to give offense because they declare dualism and pluralism to be incompatible with monism, and free will to be incompatible with determinism. *Reflections on Magic Squares, Mathematical, Historical and Philosophical* (pp. 123-147): EDITOR. - An elaborate account of magic squares, with remarks upon the symmetry of the universe. *Mr. Peterson's Proposed Discussion* (pp. 147-151): CHARLES SANTIAGO SANDERS PEIRCE. - The author urges the need of a discussion of philosophical terminology and gives an account of the meanings of the word experience. *Book Reviews and Notes*: J. Bahnson, *Wie ich wurde was ich ward*. Shailer Matthews, *The Messianic Hope in the New Testament*. Lucien Arréat, *La Morale dans le drame, l'épopée et le roman*. Francis Galton and others, *Sociological Papers*. H. H. MacDonnell (tr.), *Brhaddevata*. G. Th. Fechner, *On Life After Death*. L. Arréat, *A Correction*. Galton and others, *Sociological Papers*. H. H. MacDonnell (tr.), *Brhaddevata*. G. Th. Fechner, *On Life After Death*. L. Arréat, *A Correction*.

McDougall, W. *Physiological Psychology*. (Temple Psychological Primers.) London: J. M. Dent & Co. 1905. Pp. 172.

Milhaud, G. *Études sur la pensée scientifique chez les Grecs et chez les modernes*. Paris: Lecène-Oudin. 1906. 8vo. Pp. 273.

- Picard, É. *La Science moderne et son état actuel*. Paris: Ernest Flammarion. 1905. Pp. 299.
- Prat. *Le caractère empirique et la personnalité*. Paris: F. Alcan. 1906. 8vo. Pp. 452.
- Ragnisco, Pietro. *Pietro Abelardo e S. Bernardo di chiaravalle* (Atti del Reale Ist.). Venice. 1905.
- Ralla, Guiseppe. *Avanzamento d'ipotesi*. (Pensiero o fantasia?) Carrara. 1905. Pp. 36.
- Renouvier, Ch. *Critique de la doctrine de Kant*. Paris: F. Alcan.
- Stern, L. William. *Beiträge zur Psychologie der Aussage*. Zweite Folge, Zweites Heft. Leipzig: Barth. 1905. Pp. 154.
- Ziehen. *Leitfaden der physiologischen Psychologie*. 7th edition. Jena: Fischer.
- ΑΠΟΣΤΟΛΙΔΗΣ. *Φυσιολογική Αισθητική*. Athens. 8vo.

NOTES AND NEWS

IN the article entitled 'Lucretius and his Times' in the *Edinburgh Review* for January, the author approaches his subject as follows: "Not a few of those finer spirits have had it borne in upon them that they lived upon the brink of a new era, when the world, weary of ages of falsehood and wrong, will suddenly accept their message and society all at once be regenerated. But though Lucretius preaches his gospel with triumphant joy and faith, before him no such golden vista expands. He was possessed by the conviction that the end of the world was nigh at hand. It was one of the leading doctrines of Epicurean science that the world, like all organisms, was born and must have its period of growth, maturity and inevitable decay. To his boding mind the frequent earthquakes in Italy and elsewhere and the increasing barrenness of his own country indicated that the world had reached its extreme old age and was exhausted, and must soon break up."

Iamque adco fracta est aetas effetaque tellus

Via animalia parva creat quae cuncta creavit

Saecla dedique ferarum ingentia corpora partu.

De Rerum Natura is, in the writer's opinion, 'a genuine record of human experience, as direct and sincere' as the 'Pilgrim's Progress' of Bunyan. In a time of moral chaos Lucretius found spiritual satisfaction in the conception of physical order.

THE article 'Plato and his Predecessors,' by F. C. S. Schiller, in the *Quarterly Review* for January, is interesting for a brief but telling appreciation of Protagoras. After commenting on the logical difficulties of Plato's 'Theory of Ideas,' Mr. Schiller exhibits his own well-known position in the following conclusion: "Even if by some strange chance he [Plato] had caught a glimpse of this way out he would have averted his eyes from the impious spectacle. The view that concepts are not unalterable and are only relatively constant (like mere material things), being essentially tools slowly fashioned by a practical intelligence for the mastery of its experience, whose value and truth reside in their application

to the particular cases of their use, and not in their timeless validity nor in their supra-sensible *otium cum dignitate* in a transcendent realm of abstractions, would have seemed to him as paradoxical and monstrous and unsatisfying as it still does to his belated followers. . . . Quite recently, indeed, the banner of what may prove to be a final revolt has visibly been raised; but is it not still inscribed with the hallowed Hellenic watchwords of *Γνώθι σεαυτόν* and *Ἄνθρωπος μέτρον ἔστί*?"

Nature for February 8 calls attention to two papers in the *Journal of the Asiatic Society of Bengal* (Vol. LXIII.) and summarizes them as follows: "Mr. J. E. Friend-Pereira has discovered totemism among the Khonds, where the wider totemic exogamy has been hidden by the narrower and probably newer rule of the 'local, communal, or family type.' The 'septs,' as the author terms the totem groups, have the ordinary totem taboos of feeding, use and marriage, and myths of origin. He believes totemism 'serves to mark to a primitive people who possess no written characters to record kinship and descent as they begin to get more remote in time the distinction between separate stocks of blood. In other words, totemism is merely a guide for the observance of the rules of exogamy: it is not the cause that originated or evolved these rules.' He holds that the explanation of the origin of totemism must be sought for, not in its social, but in its religious aspect. Among the Khonds 'the totem ranks as the spirit of the ancestor founder of the stock, who is also the chief tutelary deity of the stock, and the totem class is considered as a manifestation of the chief tutelary deity.' Major P. R. T. Gurdon has a valuable short paper on the Khasis, Syntengs and allied tribes of Assam, among whom mother-right so predominates that males can own only self-acquired property. There are traces of totemism. Ancestors are worshipped by the erection of remarkable memorial stones, of which two illustrations are given; this form of worship largely underlies the Khasi religious system. Divination by the breaking of eggs is very common. Major Gurdon is superintendent of ethnography in Assam, and is apparently preparing a monograph on the peoples under his charge which, judging from these notes, should be a valuable work."

THE first number of the *Biologisches Centralblatt* for 1906 is devoted to evolutionary conceptions of development and embryology. In a paper by Mr. Henriksen it is argued that everything in nature tends toward its own type of equilibrium. The author undertakes to show that Weismann's theory of germ-plasm structure is unnecessary and, when worked out in detail, absurd.

THE Western Philosophical Association will hold its sixth annual meeting at the University of Wisconsin, Madison, on Friday and Saturday, April 13 and 14, 1906, in conjunction with the meeting of the North-Central Section of the American Psychological Association. Five sessions will probably be held, of which one will be devoted to the annual presidential address, and one will be a joint session of the two associations. It is planned to set apart one session for a general discussion of the topic, 'Recent Arguments for Realism—with Especial Reference to the Relations of Realism and Pragmatism.' Members intending to

present papers are asked to notify the secretary, Arthur O. Lovejoy, Washington University, St. Louis, Mo., of their titles and the probable length of time required in delivery, not later than March 15. A detailed program will be issued to members about April 1.

We take the following from the New York *Evening Post*: "A class exclusively for patients afflicted with mental disease has been organized in the dispensary of the Cornell University Medical College. This department will be under the charge of Professor Adolf Meyer. Hitherto there has been no such class in the city, though there are many of the poor not sufficiently deranged to be committed to asylums, who need more expert attention than can be given them at home. In addition to the philanthropic advantage, the new clinic will enable the student to observe in the early stages when mental disorders are most curable. On account of inexperience the average practitioner is likely to overlook these cases until they have passed the curable stage. Technically the clinic is known as the department of psychopathology."

PROFESSOR WILLIAM JAMES and Dr. James H. Hyslop, vice-presidents of the American Branch of the Society for Psychical Research, have issued the following letter: "In the death of Dr. Richard Hodgson, the secretary of the American branch since its foundation, the society, as well as his personal friends, has suffered a great loss. The work of the branch, however, will be continued under the direction of its vice-presidents or those appointed by them for the purpose until a satisfactory and efficient permanent arrangement can be made. In the meantime it is important that past subscriptions to the society's work should be continued, and new ones obtained if possible, as there is a mass of documentary material collected by Dr. Hodgson which awaits the completed critical treatment he would have given it had he lived, and which should now be dealt with. And there are also certain new and important possibilities of investigation which have just come into sight."

THOSE concerned with methods of pedagogy may be interested to know that the Cambridge University Press is publishing a series of short works on various subjects in pure mathematics and physics. The aim is to assist in maintaining a high standard in the English teaching of mathematics by presenting in a handy shape accounts of new methods and of recent mathematical research. The series bears the title of 'Cambridge Tracts in Mathematics and Mathematical Physics.'

THE National Educational Association will hold its forty-ninth annual convention at San Francisco, July 9 to 13. The department of superintendence met at Louisville, Ky., from February 27 to March 1.

THE first number of the *Zeitschrift für Aesthetik und allgemeine Kunstwissenschaft*, edited by M. Dessoir, has been published by F. Euke, Stuttgart.

AT Harvard University it has been decided to organize as a separate department the work in education, hitherto included under the department of philosophy.

PROFESSOR J. MARK BALDWIN is to lecture on genetic logic at the University of Chicago during the first half of the next summer quarter.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

RECENT DISCUSSION OF FEELING

THE word 'feeling' as a psychological term is a sin of the fathers which has been visited upon long generations of sons and bids fair to make trouble for generations yet unborn. Surely the effort to free ourselves from this inherited incubus is eminently praiseworthy and the discussions recently published in this JOURNAL can not fail to contribute efficiently toward this end. Personally I am somewhat pessimistic as to the speedy attainment of any thoroughgoing relief from the difficulties at issue, because of the insidious influence of long linguistic tradition. But I am heartily in sympathy with the attempt to better matters, even if the betterment should consist in so drastic a measure as the general agreement to abandon all pretense of employing the term in a technical manner. I shall address myself first to the very instructive suggestions of Mr. Marshall and Mr. Gardiner, both of whom have called attention to certain of the ambiguities and inconsistencies which vex current usage, and with both of whom I partly agree.¹

Two questions are really at stake in this affair. (1) Is it possible, without indulging illicit liberties with language, to divest the word 'feeling' of a sufficient number of its various connotations to permit its use as a technical term? (2) If the word be thus retained with a technical meaning, to what specific class of psychical conditions shall it be applied and confined? The writers whom I mention are agreed as regards the first point, that the term *can* be saved for technical service, albeit with difficulty. But they do not altogether agree as to the significance which it shall convey, nor as to the psychical conditions to which it is properly applicable.

Mr. Marshall, as I understand him, would make feeling an undeveloped form of presentation which if fully evolved reveals itself as the empirical ego. "The 'feeling attitude' is the attitude of the empirical ego not yet become explicit." (A formulation, by the way, strikingly similar to one advanced by Dr. Gordon in an earlier

¹ Marshall, this JOURNAL, Vol. III., p. 29; Gardiner, *ibid.*, p. 57.

number of this JOURNAL.)² And again—"Feeling is subjectiveness pure and simple, and this means that as the empirical ego becomes explicit feeling necessarily attaches to, or is resolved into, this empirical ego." From this statement it appears that Mr. Marshall applies 'feeling' to special contents of consciousness, to a zone of consciousness, so to speak, but not to any isolated partial content like pleasantness.

Now for my own part I am unaware of harboring toward the empirical ego any sentiments other than those of respect. But I fear lest Mr. Marshall's suggestion, if adopted, should lead us perilously near the margin of psychological 'chasms fathomless to man.' Certainly we must admit that the present usage as regards the term feeling is tortuous and unconvincing. But the empirical ego implicates regions still dimmer and less palpable, so far at least as concerns terminology. To attempt to clarify the meaning of an ambiguous term by relating it to a term still more shady in its connections appeals to me as likely to be somewhat futile in its outcome. Possibly Mr. Marshall and my other professional brethren will overrule me in my contention that the empirical ego enjoys so unstable a status as my words imply. In any case as regards this point my reservation affects simply the *modus operandi* of Mr. Marshall's effort to orient the terminology. I shall mention in a moment a difficulty of psychological fact which is in my judgment far more serious.

Mr. Gardiner suggests that we define feeling as 'the immediate consciousness of the modification of individual experience as such.' "The term 'feeling' as thus used denotes no class of mental facts or contents of consciousness in particular, but refers to a special aspect of consciousness." He quotes from my 'Psychology' to the effect that pleasantness and unpleasantness inform us 'of our own internal mental condition.' Upon which he comments that they are not the only states which give us such information and consequently my definition is defective in precision. And he continues, "If feeling is thus informative it can not be sharply distinguished from cognition, unless cognition is arbitrarily limited to knowledge of external objects and relations." To which I reply, that whether or not pleasantness and its contrary are the only conscious qualities immediately indicative of our internal mental condition as *internal*, feeling is precisely that aspect of consciousness which has this mediatory function as its primary business. It is, if you please—with apologies to Mr. Ward—a kind of subjective cognition. The difficulty in distinguishing it from cognition as dealing with external objects is no greater and no less than that which attaches to

²See Vol. II., p. 617, ff.

any nice piece of introspective analysis. As a matter of terminology there need be no difficulty at all on this score. Nor can I think it to the point to urge, as Mr. Gardiner does, that *ideas* often inform us of our mental condition. In the moment of experiencing them they always function in our minds as *meanings* set over against the mind which thinks them, a fact which Wundt long ago brought out. Feeling as such gives us mental attitude itself toward these contents and meanings.

Despite our animated differences of opinion in regard to the details of our doctrines, I take it that we are all substantially agreed that feeling should designate the distinctly personal, internal aspects of conscious life. But whereas certain of us straightway set out to seek this in specific forms of conscious process, as does Mr. Marshall, others of us, like Mr. Gardiner, undertake to locate it not in such special contents, but rather in an envisagement of the whole range of mental activities from the side of their internal meaning and import. Both modes of procedure have no doubt their sufficient warrant, but it must be obvious without argument that the results of these two forms of psychological method are not likely, if they are conducted independently, to issue in a unified and harmonious doctrine.

Feeling viewed as merely an internal aspect of all conscious process is a category of interpretation rather than one of immediate conscious deliverance. It belongs to the psychical rather than to the psychological. By which I mean to say that it does not correspond, as do pleasure and pain, for example, to any specific item in our actual life as we are immediately aware of this. From a reflective and philosophical point of view we discern that a portion of our psychical activity purports to reflect external objects of some kind, or at all events that we can so regard it. Similarly we find on reflection that every mental experience is owned by some one. It is my experience or yours, or Henry's. As such we regard it as being felt. From this standpoint, as Mr. Gardiner in common with many others insists, feeling is not a mental stuff different from ideational material. It is rather a particular way of viewing this material; i. e., as internal and personal in its significance.

My own theory, partially developed in my 'Psychology,' attempts to kill two birds with one stone—thereby missing both, I imagine some of my critics will urge. It maintains not only that feeling is properly and primarily attributable to the subjective and personal side of conscious processes, but also that this internal phase of consciousness (Mr. Royce's 'present sensitiveness to the values of things') has a definite and distinguishable representative in mental life, just as the knowledge phase of the mind has. I have personally

held that these representatives were probably restricted to pleasantness and unpleasantness, but, so far as the general view is concerned, these elements might readily be far more in number. When and in so far as a total state of consciousness is dominantly marked by these features, I speak of it as feeling. If I do not desire specifically to call attention to this phase of the mental condition, I try to employ some other word. My failure to carry out this program with entire consistency in my 'Psychology' is fairly attributable to human frailty and the treachery of words, rather than to any inherent defect in the scheme. I could, if necessary, revise the text so as to purge it of all these blemishes. This usage retains for the term its significance as an index of peculiarly private personal relations, and although arbitrary in the limitations which it imposes, it is nevertheless explicit and does no violence to linguistic traditions so far as concerns its positive import. It has the further merit, as it seems to me, of bringing out overtly that which is actually implicit in the usage of many of our best authorities, among others the authors of the article on feeling in the 'Dictionary of Philosophy and Psychology.'

My indisposition to speak of 'relational feelings,' as Miss Calkins and others do, is not that I question the experiential reality of the conscious items thus designated, but that they seem to me to belong distinctively to the cognitive and motor aspects of mental process. I regard them as immediately indicative to us of cognized relations rather than of our subjective sentiments toward these relations. Often they are deeply colored with feeling elements (in my sense of the word feeling), especially in cases of indecision and hesitation. But this does not justify us in confusing with one another the several kinds of conscious process thus conjoined. I shall refer again briefly to the matter at the end of this paper.

My chief objection to Mr. Marshall's doctrine, in so far as it necessarily diverges from the one I have just formulated, is that it apparently relegates feeling to the limbo of the altogether vague and inarticulate. Now I do not doubt that much feeling is vague and elusive, but I do not find this an invariable nor indispensable quality. Feeling is, to my thinking, often a matter of the very foreground of consciousness, forming at times a positive pinnacle in the mental field. Which is evidently another way of saying from my view-point that its momentary representative in the mind is thus in the high light. If pleasantness and unpleasantness are merely incidental concomitants of feeling, as Mr. Marshall seemingly maintains, it is difficult to see how he can satisfactorily account for the vividness which undoubtedly attaches to that which he and I would both, I fancy, in any concrete case call feeling, *e. g.*, acute anxiety. Mental processes

of a vivid character tend always, so far as I am aware, to push themselves into the foreground of apperceptive consciousness, and this from Mr. Marshall's standpoint would inevitably result in their cessation as feeling and their translation into some other form of consciousness, *i. e.*, in this case the empirical ego.

I quite agree with Mr. Marshall that pleasantness and its contrary taken alone do not constitute feeling. They are, however, in my opinion the specific indices of just that internal significance which gives the peculiar individualistic tang to every experience. They are the automatic gauges by which is immediately registered the internal evaluation put at each moment by the psyche upon the experience of the moment. That they often emerge from vaguer to clearer conditions I can not question, nor that in this process of emergence they often change somewhat their features. But in none of these considerations, nor in any others, do I discover reason to restrict feeling to the marginal and subliminal regions outside the jurisdiction of apperception. I welcome any disposition on the part of competent persons like Mr. Marshall to write more fully than has yet been done the history of the outlying territory of the mind. But I can not look with enthusiasm upon the looting, as it seems to me, of the central storehouses of the mind in the interests of this project.

In conclusion, just a word as to certain suggestions of Professor Washburn, who proposes³ to characterize feeling by two differentiae, one the familiar negative quality of being unlocalizable, the other the less familiar Wundtian sensation differentia of being unanalyzable. This definition instantly implicates the search for specific contents of consciousness against which Mr. Gardiner has set his face and to which reference was made when I was pointing out the two main sources of divergence in current doctrines of feeling. Mr. Marshall, it will be remembered, also makes feeling applicable to certain contents of consciousness, but they are entire moments of certain stages of conscious process, not isolated elements like Miss Washburn's. Miss Gordon's position already referred to is in this particular akin to Mr. Marshall's. Her very stimulating paper raises, however, an entirely different issue in addition to the one now under discussion, and I make no attempt to evaluate it in the present connection.

My own view obviously contemplates assimilating the positive contributions of both types of theory, for I regard the one view, *e. g.*, such a position as Dr. Washburn's, as conveying the beginnings of a structural psychology of feeling, whereas the other standpoint

³ This JOURNAL, Vol. III., p. 62.

affords me what I consider one phase of a functional doctrine. I hold both to be not only true, but equally indispensable to a complete account of feeling. I should not wish to call pleasantness and its opposite feeling as such. I prefer, as I have already indicated, to follow the usage which I think accords more nearly with our linguistic tradition, and I should, therefore, reserve the term for a total psychosis in which the factors just mentioned are dominant. I am by no means certain that these elements will indefinitely resist analysis, nor can I admit that relational psychoses are even now wholly unanalyzable, but nevertheless in the main I agree with Dr. Washburn so far as her view gives a statement provisionally acceptable for a structural psychology. Her connection of relational feelings with congenital motor attitudes is thoroughly congenial to my whole point of view, and I should only insist that this connection is no exclusive prerogative of such feelings. Every psychosis can, in my judgment, be stated in terms of motor activity and must be so stated in order to appreciate its full significance.

JAMES ROWLAND ANGELL.

UNIVERSITY OF CHICAGO.

COGNITIVE THOUGHT AND 'IMMEDIATE' EXPERIENCE

IN a former discussion I maintained that the genesis and plausibility of some recent metaphysical realisms were due to a confusion between the psychological and the logical treatments of thought. In the present discussion I shall endeavor to point out that the doctrine known as 'pure' or 'immediate' empiricism derives its plausibility in part from the same confusion. There is, indeed, to-day a widespread tendency to hypostatize experience, to regard it as the all-comprehending reality of which men and things are elements, from which thought sets out on its reflective quest and into which in the end it is somehow absorbed. But one does not find a distinction made and kept between experience as 'actual' and 'personal' and experience as 'possible.' What in strict logic holds only of the latter is asserted of the former, and *vice versa*. This treatment of experience one finds with varying contexts in Bradley and his disciples and in Professors Dewey and James. It is with the views of the latter two alone that I shall be herein concerned.

Professor James tells us that a physical object, *e. g.*, his pen, is an experience which may be taken in two contexts: (1) in the personal context of my or your experience; (2) as a pure experience or pen experience in itself. 'The pen experience,' we are told, 'in its original immediacy is not aware of itself: it simply is,'² etc. Now

² This JOURNAL, Vol. I., pp. 538, 566, etc.; Vol. II., p. 180, etc.

what does this latter expression mean? I have some notion of the existence of a physical object when no one thinks it. I have even a glimmering notion of what it might mean for the pen's existence to depend on the thought of an all-thinker. But I can frame no intelligible notion of what a pen is as a bit of pure 'physical' experience which no person has and which has itself no feeling. Surely it can only conduce to confusion of thought to apply the term experience to anything that actually figures in no consciousness.² If the personal *quale* be eliminated from experience there is nothing left but the bare *possibility* of experience, and surely it is a mistake to call an unconscious possibility experience? Words should have some sort of definite meaning even in philosophy, and the following definition of experience taken from the Century Dictionary states the actual historical meaning of the term and brings out its personal *quale*: "The state or fact of having made trial or proof, or of having acquired knowledge, wisdom, skill, etc., by actual trial or observation. Personal and practical acquaintance with anything."

The consequence of the loose use of this term 'experience' is that so short and easy a road is found to some all-comprehending unity of experience. We are told by James that the sum-total of experiences is a 'pure' experience on an enormous scale, undifferentiated and undifferentiable into thought and thing.³ Now this sum-total of experience, this 'pure' experience, either is had by some psychic center or it is not. In the latter case we are landed in a mist (I was about to say 'mysticism') which is fatal to clear thinking. We are told that experiences are 'confluent,' etc. Now *qua* experience my psychic life is uniquely and unsharably my own. As experiencing centers,

—"in the sea of life enisled,
With echoing straits between us thrown,
Dotting the shoreless watery wild,
We mortal millions live *alone*."

The interrelations of selves, the common truth and the social activity, doubtless do refer to common or over-individual conditions or implications of experience. But these common conditions must transcend any actual experience.⁴ I do not get my individual experiences by taking a slice out of a social or cosmic common-sensorium, nor can I without further ado logically 'pool' my experience in a social 'pot.'

² *Ibid.*, Vol. II., p. 181, etc.

³ *Ibid.*, Vol. II., p. 181.

⁴ When Professor James says that 'experience itself, taken at large, can grow by itself,' that it 'proliferates' by 'continuous transitions,' etc., does he mean in the individual or is he talking about the totality of experience?

Professor Dewey does not assume that experience is a comprehensive flux or matrix in which all separate experiences meet and blend. Experience for him is always determinate.⁵ Every experience is a real thing and every change in experience is a change in reality. Determinate experiences are conterminous with things. There are just as many reals as there are experiences. He says that when I am frightened by a noise, that is one experience or 'thing,' and when I discover that the cause of the noise is the flapping of the window-blind, that is another real thing. And when I see Zöllner's lines as convergent they *really* are convergent. When the experience is corrected we have a new real. Now, of course, all my experiences, whether judgments true or false, hallucinations, emotions good and bad, and what not, are actual in the sense of having psychical existence. The plausibility of Professor Dewey's contention that reality = immediate experience is due to the paralogism of identifying the psychically existent with the total reality, 'actual' with 'possible' experience. In logic, as I have previously insisted, reality is primarily that which judgment *means* or *refers to*. In the Zöllner line illusion my experience as cognitive gets the wrong reference. My percept does not mean what I take it to mean. And I reconstruct or transform this particular bit of cognitive experience by a reference to other conditions of the perception, *i. e.*, by reference to a more systematized experience of reality. Similarly, when I discover the cause of the noise I may not alter at all the fact of 'window-blind-wind-blowing.' I make a new judgment by a systematic reference and so alter my personal state. In such cases we rectify our cognitive relations, not the external reality. These rectifications mean that the references of our meanings to the reality which has not changed must be altered in order that cognition may work.

Professor Dewey insists that any experience is determinate. He says the vague impression of something in the dark "is as 'good' a reality as the self-luminous vision of an absolute." But it isn't if it does not work as well. If I take this vague impression for a soft couch and it turns out to be a coil of hot steam-pipes or a bathtub, I do not consider my former judgment to be 'good.' I say it was an erroneous experience and the steam-pipes are and *were* real all the time. Professor Dewey insists that to find the meaning of any philosophic concept we must go to experience. True! but how? to whose experience? and how shall experience be controlled? We must *think* in order to make experience yield its fruitage, and because it fails to yield complete fullness and harmony our thought must continue ever to transcend actual experience in its own inter-

⁵ *Ibid.*, Vol. II., p. 393, ff.

ests. The urge and stress of thinking is born of the partial failure and partial promise of actual experience. Professor Dewey says that the method of immediate empiricism is identical in kind with that of the scientist. But the scientist is continually remaking experiences and by thought constructions transcending the actual. The all-pervading frictionless, massless fluid and the electric corpuscles of the physicist certainly transcend immediate experience. Actual experience, which always belongs to a self and hence is not a substantive reality, does not stand self-sufficient on its own feet. If every determinate experience did so stand, like Professor James's 'pure' pen experience, unconscious and absolute in its own right, of course there would be no occasion for thought's corrective and supplementary work. Things would be just what they seem even when there was no one for them to 'seem' to. The sun would go round the earth, there would be two marbles when the finger-tips are crossed in the Aristotelian experiment, two moons in the sky for the extreme devotees of Bacchus, etc. The strictly theoretical parts of physical science abound in thought constructions by which actual experience is corrected, made more consistent, supplemented. Of course the value of these constructions has reference to a 'possible' self-consistent or complete experience, but this is an ideal which becomes actualized only in part. And even in the case of a perfect 'possible' experience, if we do not presuppose an experiencing center or self, we are assuming an unconscious experience had by no one. Such a conception seems to me to have about as much meaning as 'wooden iron.' In short, pure or immediate experience is the hypostatization of the psychological abstraction of consciousness or experience 'in general.' It is legitimate for the psychologist to treat consciousness as a fact by itself, but is it legitimate to assert that experience is the bed-rock of reality apart from whether any self has consciousness of it or not? And if we stick to the personal *quale* of experience all philosophical concepts will not be found on the same level or yield their meanings in the same terms. So-called immediate experience is simply the indifferent starting-point for all philosophy as for all science and rational activity. But it is shot through and through with mediacy, and it is the function of reflective thought to justify the element of mediacy in each specific case.

Our 'immediate' experiences are being constantly corrected by thought. This is notoriously the case with perceptual experience. But it is quite as true that esthetic, personal and religious experiences do not yield their full fruitage without the interpreting and transforming activity of cognition, an activity that does its work by developing the element of mediation already there and without which experience would be a meaningless 'brute' datum.

Just herein lies the dynamic and constructive quality of thought. The vital function of thought consists in submitting immediate experiences to a reflective treatment by which they are made to yield up to thought interpretation of their meanings and submit to control and transformation at the hands of thought. Mere thought is not life, but thought's contribution to life consists in interpreting, transforming, harmonizing and supplementing actual experiences. This work logical thinking performs just because it is not a mere psychological existent on a dead-level with every sort of grain and smut that may be grist for the psychological mill. In the performance of this work cognitive thinking transcends a mere psychical existence and reaches beyond actual experience. It develops implications in regard to the real that are required to render more consistent and harmonious actual experiences that are in themselves fragmentary. These implications, we may say, refer to some self's *possible* experiences, but they are not now convertible, and we may not understand the conditions under which they may become convertible, into the current coin of our immediate experiences. In this sense, reality for thought that goes to the bitter end must include implications that are only 'possible' experiences.

Every immediate experience has, without further consideration, whatever reality may belong to *any* psychical process. In this sense cognition is just one element in experience. But when we remind ourselves that thought as psychological fact and thought as valid meaning or reference are two different things, and that it is in the latter sense alone that thought in its dynamic actuality is adequately conceived, we shall not make the mistake of putting cognition on a level with other psychical facts and so eliminating its transcendent reference.

The psychological treatment of thought is responsible for the assumption that reality equals experience. It is one thing to say experience is real (and, of course, all experience is real in the sense of being actual psychical process, although we hardly need a new philosophy to convey this very obvious bit of information) and quite another thing to say that *all reality* is immediate experience. Our immediate experiences, cognitive and non-cognitive, are often misleading, fragmentary and inharmonious. Reality in the fullest sense means the objective system of conditions in relation to which these experiences may get corrected, enlarged, harmonized. Of course, thought must make a difference to reality, both extra-experiential and intra-experiential, and *some* reality must be of the sort to which thought can make a difference. Thought both transforms experience and alters some elements in reality, so making way for a readjustment of experience. Of what sort this reality must be so to undergo

the action of thought is a question remaining over—the metaphysical problem of logic.

In his latest discussion⁶ Dewey lays emphasis on the end-state of knowledge as saturated with emotion. Knowledge mediates activities whose aims are the development of emotional substrates or continua into perfect feeling-harmonies, moral, esthetic, personal. Now it seems to me perfectly true that the goal of a completed cognition is always a personal state suffused with emotional coloring. But I should deny that the *differentiæ* of cognitive feeling are reducible to moral and esthetic terms. Since all higher feeling is a reaction of the unity of self to a content, cognition involves feeling, and the articulation of knowledge is the articulation of feeling. But I should maintain that the personal feeling which accompanies any relatively complete insight in science or philosophy may have a unique *quale* due to the specific character of the cognitive reaction. In other words, cognitive feeling may be and often is *sui generis*, i. e., not reducible to moral, esthetic, or religious terms. And I should agree with the contention that thought has always personal reference, while insisting that 'pragmatism' ignores the ontological implications of this reference.

Thought is never wholly external to any personal experience. 'Pure' experience devoid of thought is a *Grenzbegriff*. There are two chief desiderata in the epistemological treatment of experience: (1) the explication of the chief logical stages, through which, in the individual and the race, experience passes by the action of reflective thinking, and which stages run, of course, from a beginning in which thought is inchoate to a relative conclusion in which it has become definitely articulated; (2) the explication of the objective or universal implications of the individuals having experience. This is the problem of the definition of an envioning world or reality, social and physical. The fact that my experience is uniquely my own, as well as determinate, does not abolish but rather sets a metaphysical problem.

We are repeatedly told that pragmatic empiricism is a new 'method' of treating philosophical concepts. But, so far, we have been given only vague generalities, and those of us who are not convinced thereby are told that it is because we are irretrievably mired in the bog of transcendentalism. 'By their fruits ye shall know them.' Let the pragmatists, or immediate, empiricists give us a thoroughgoing treatment by their method of one or two fundamental philosophical concepts, substance, causality, thinghood, selfhood, etc., and then perhaps the actual demonstration of the pragmatic uses of this 'method' will let light into our skulls. In the meantime, per-

⁶ This JOURNAL, Vol. II., pp. 707-711.

haps one may be pardoned for the perversity of holding on to a point of view which seems both to be more in harmony with the whole procedure and function of reflective thought and to have yielded some definite results. And I will be specific and say that I mean that the philosophies of Kant, Fichte and Hegel have yielded definite results in rendering the actual world more intelligible in terms of an idealistic¹ rendering of experience.

J. A. LEIGHTON.

HOBART COLLEGE.

DISCUSSION

THE QUARREL ABOUT TRANSCENDENCY

PROFESSOR JAMES has said: "Does it not seem as if the quarrel about self-transcendency in knowledge might drop? Is it not a purely verbal dispute? Call it self-transcendency or call it pointing, whichever you like—it makes no difference so long as real transitions toward real goals are admitted as things given in experience, and among experience's most indefeasible parts."¹ I believe these words apply to more than one philosophic issue, but I take up now only that about transcendent objects. The arguments on both sides grow so numerous and complicated that one feels the need of stopping to ask: What does it all amount to? The radical empiricist is concerned to define externality in experiential terms: the realist is equally concerned to show that in this definition something is omitted, unaccounted for, namely, the transcendent external object. But does it make any difference to practical life or to one's system of philosophy whether the realist is right or wrong in this?

Let us state very roughly what has resulted from the discussion so far, so as to get the issue before us. The empiricists began by defining knowledge in practical terms. It was objected that this laid so much stress on the subjective side as to exclude real external things and standards. Doubtless the word 'experience' was partly to blame for this, since it has usually signified a personal and subjective affair in contrast with the things with which it was conversant. If given a definite meaning, it would naturally mean the experience limited to one's own body.² But the empiricists replied that theirs was no such narrow view. They have, after all, as much good common sense as the realists, and believe in a real objective world. For them 'experience' is no more subjective than objective;

¹ When I use the term 'idealism' without qualifying phrase I mean metaphysical, *not* epistemological or psychological idealism.

² This JOURNAL, Vol. II., p. 237.

³ W Fite, *Philosophical Review*, January, 1906.

it insists, indeed, on the correlation of the two. It is not a question of affirming or denying the reality of objects, but rather of what objectivity and reality mean. And whenever an opponent says that a transcendent real object out of all experience is implied in knowledge, they can tell what that object's externality means, in experiential terms.³ Whoever asserts that there are residua in knowledge which immediate experience can not embrace will be asked what these residua are, and then the empiricists will state their meaning in experiential terms; whether the residua be transcendent objects or thought-relations⁴ or some other kind of transcending something.⁵ In any case it is possible to tell what the transcendent term is, what it means to us, by referring to the various contents and relations of experience which are concerned with it. Yet in spite of all these experiential definitions the realist doubtless feels that something itself external to experience has been omitted. And so the circle revolves and, it seems to me, must always revolve. For as soon as you assert your belief in something other than what experience possesses, you must either describe this by intelligible words or refer to immediate experience to signify what it is. The latter is what the empiricist wants you to do; the former also plays into his hands, because words are intelligible only when they refer to suggested possible or actual experiences. And just in so far as the realist asserts that something more is implied (which he infallibly will do), the empiricist will meet him with experiential definitions. Thus an indefinitely long argument may arise: the empiricist always defining in empirical terms, the realist always asserting a new residuum.

I do not mean to say that any one is to blame or that this endless argument can be avoided, if we once enter upon this kind of discussion. The empiricist will continue to feel that everything we believe in must be capable of formulation in experiential terms, if it is to mean anything to us. I think he is right. The realist will continue to feel that there is always something beyond and outside what we have attained at any stage in our empirical formulation. I think he, too, is right. Knowledge and its objects seem to me to offer an inexhaustible field for investigation, and the modes under which we can describe externality to be endless in number. But what causes the trouble is, that this inexhaustibility and endlessness are supposed to be due to a difference in kind, a separation, between externality and any content or relation of experience. Externality is, I think, surreptitiously taken to mean *existence in separation from experience*, actual or suggested. If it were understood to imply merely a

³J. Dewey, this JOURNAL, Vol. II., pp. 707-8.

⁴C. M. Bakewell, this JOURNAL, Vol. II., pp. 520-522.

⁵Cf. W. B. Pitkin, *Philosophical Review*, January, 1906.

possible infinity (i. e., an indefinitely great number) of experiential descriptions in order to exhaust the nature of an external object, there would be no quarrel between the two views. But when the above definition of externality or transcendence is lugged in, the endless argument is inevitable.

This description of the problem is by no means new. Fichte⁶ has dealt thus with the problem of idealism *versus* realism, and the likeness of the above to the Kantian antinomies is apparent. But the solution of the difficulty lies, I think, in a different direction from that taken by either of these thinkers. For them the endless antinomy was inevitable, but I think it rests on a misconception.

Note, first, that the question whether externality means existence in separation from actual or possible experience is one which can not be answered by any 'knowledge of acquaintance' or by 'knowledge about' what is given to experience. It is not in question what facts are found or what contents and relations they display, but whether those contents and relations are apart from experience. Kant has taught us that the describable character of a thing in no way determines its existence apart from the mind. Since now there is in the nature of the case complete independence between the two, the proposition may be converted. So we may say that its existence apart from experience, actual or possible, has no effect whatever on the characters or relations which the thing offers to us. It makes no difference whatever, either to our knowledge of acquaintance with or to our knowledge about objects, whether they exist apart from experience. No new information is gained if they are proved to do so, for no property of the contents or relations offered in experience follows therefrom which would not follow from the things in experience *as* they are experienced. Permanence, unity, causality, all such properties which have been supposed to depend upon existence apart from experience,—these can be guaranteed just as completely by the contents offered in experience and can themselves be wholly defined in terms of possible experience. In other words, the conception of existence apart from, and independent of, actual or suggested experience, which, as we saw above, leads to the endlessly revolving circle of dispute, does so because it is supposed to make a difference to knowledge which it really does not make. The settlement of the issue one way or another does not add to or take away from our knowledge at all. That is, it is no real issue, but a specious one.

The statement that existence apart from experience makes no difference to knowledge will doubtless be felt by the realist to rob

⁶'Grundlage der gesammte Wissenschaftslehre,' first part of 'Practical Part,' Jena, 1795.

knowledge of all that gives it sense. But consider an example. Suppose I entertain an idea of a certain book lying on my table, and the question is raised whether the book actually lies on my table. Here, if anywhere, its existence apart from experience would seem to make a difference to knowledge. But here the whole issue is, whether the idea fits into that particular context of experience which I call looking at the table. This context is possessed by experience just as much as the one called subjective, in which I have merely the idea. And, on the other hand, the idea *exists* just as much as the external book; but it has different relations, a different context. The question is, will it fit into that other context which I call physical which comes when I look to see. It is the *context in which* the idea lies, not its existence or non-existence, outside of experience, which makes the difference to knowledge and to practise. This is, I think, a type of what always holds. The issue is always decided, not by an affirmation of existence or non-existence, but by a statement of *what context* the thing exists in. If the radical empiricist prefers to say that this context is what we mean by existence, I am willing to agree. The point is that the whole matter can be described in experiential terms. It is often shorter, indeed, to speak in realistic terms and say 'external' rather than 'in the physical context' or 'the ground of successful action.' But the two modes of expression are, so far as they convey real information to us, but two different languages expressing essentially the same belief: there is really no issue between them.

This should, I think, be evident from the nature of the case, but if illustration is needed, we find it in the history of thought. Idealists and realists alike have believed in the same outer world and the same objects and persons. The experience-philosopher to-day admits permanent objects, believes in the past history of the world, and in other personalities than his own, quite as earnestly as the realist. He simply defines them in terms of actual or possible experience, as felt or suggested goals or sources of thought, emotion, or conduct, whose value and meaning consist wholly in their actual or possible effects on our own experience.

Any matter of belief can be formulated in either experiential or realistic language. Professor Woodbridge's realistic definition of consciousness as a relation between physical things or processes can be put in experiential terms, if the physical things be described as suggested goals of a cognitive process or grounds of successful action. Or, take the case of a past fact which we believe in—such as the history of the earth before man existed. This, which is commonly stated in realistic terms, admits of translation into experiential language. The early history of the earth (which of course is not now real as the present is real) is real in the sense that inquiry into

the ground of present phenomena in which we believe leads us, by our customary modes of inference, to believe in certain other contents not in the present external context. These other contents (past earthly history) are objects of my present belief, and their existence before I came to believe them is also object of my present belief,—and the whole meaning and value of such objects of belief are not to be understood except in their bearing upon my belief. Thus radical empiricism can describe the matter—though individual radical empiricists may prefer to use other experiential terms than those I have used. But there is no more real difference between the two modes of description than between ‘the day is clear’ in English and in French.

I do not deny that real issues are raised by radical empiricists or realists. Whether knowledge can be defined wholly in practical and esthetic terms or whether it is an irreducible kind of experience is, I think, a genuine issue, for it can be decided by observation of given contents and relations. And doubtless there are many other real issues. But the issue between radical empiricism and realism, as understood by many of the recent disputes, has nothing to do with these. *That* dispute is irrelevant to *any* other, because the given contents and relations of things alone determine their place in life and in one’s system of knowledge.

Is not a similar misunderstanding at the root of some other old controversies of philosophy? Of course philosophy can not expect to progress as fast as science, because its problem is so much bigger, but at least we may walk straight ahead faster, and not keep stopping to disentangle our feet, if we can rid ourselves of some of those old disagreements which have brought so much reproach upon us. For instance, the old quarrel about substance and its attributes turns, I think, upon a mistaken issue. Is the substance something transcending its attributes or not? It makes no difference, so long as we can define the substance in terms of its attributes so as to guarantee their permanence, coexistence and other concrete properties. Again, take the old issue about universals. Is the universal anything external to the series of possible cases? It makes no difference, so long as an indefinite number of possible cases is provided for in the character and suggestiveness of one or more actual concrete cases. And perhaps there are some other time-honored issues which would have to go by the board. I know well that he who thinks he has escaped an old problem usually finds it again on his hands in a new form. And yet there have been such things as mistaken issues; and there is, I suppose, a chance that those I have mentioned may be such. We have everything to gain and nothing to lose by accepting the terms of peace here proposed. We can not be worse off than before, and

we can gain time and energy to acquire some more systematic information about the structure and functioning of the universe. Philosophy may then hope to become, what we fear it is now only to a slight extent, a fixed body of doctrine which will command the respect of all who desire to acquire knowledge.

W. H. SHELDON.

PRINCETON UNIVERSITY.

REVIEWS AND ABSTRACTS OF LITERATURE

The Concept Action in History and in the Natural Sciences. PERCY HUGHES. *Columbia University Contributions to Philosophy, Psychology and Education*, Vol. X., No. 3. New York: The Macmillan Co. 1905.

With the exception of the presidential address of Professor Münsterberg, delivered some years ago before the American Philosophical Society, this monograph of Dr. Hughes is the first serious contribution of American scholarship to a discussion that is looked upon by many of the guild of philosophers across the water as one of the most important in the whole history of logic. A group of German thinkers has arisen who deny that the natural science method is the only method that may be legitimately employed in the search for truth, who emphasize the 'antithesis between history and the natural sciences' and who believe that they have laid the foundations of the logic of the historical sciences. Professor Rickert has given the most comprehensive account of this logic. It is, as he teaches, the logic of individuals as opposed to the logic of universals.

Dr. Hughes is in sympathy with the work of the Germans. He does not deny the antithesis between history and the natural sciences, but would set it out along lines that seem to him 'more clear, at least to English-speaking people, than those adhered to by German logicians.' In 'the common word and concept *action*,' he believes that he has found 'an instrument of speech and logic to which no German term, in its common use, is equal for this particular purpose.' Rickert, according to Dr. Hughes, "in asserting the bald antithesis of the sciences of *individuals* and of *universals*, fails to grasp the wealth and positive character of the historian's work, or really to unite under one concept the full purpose of historical as contrasted with naturalistic construction. My thesis is that to describe the content and purpose of historical construction, the concept *action* is fully adequate. . . . *Action*, then, as contrasted with *law* is to be the central theme of this essay."

In his first chapter, Dr. Hughes traces rapidly the history of the theories of the nature of history from Aristotle to Rickert, noting that before Kant, who 'laid down the general principles of historical as contrasted with mechanical or natural science,' philosophers failed to grasp the logical character of the historian's work. Droysen's contribution to the discussion he ranks very high, but criticizes him because he 'wrongly marks off the moral world from histories in general, as history's peculiar

field,' and second, because 'he keeps in the background the essential feature that gave unity to his treatment, the fact that history deals with objects as determined from within by latent tendencies, with activity, with agencies and actions, not with objects void of character, determined by circumstances, by their relations, not with passivity, not with atoms and motion.' In presenting his own theory as a development of the preceding, Dr. Hughes contends that 'the content of any history is fundamentally that *action* which characterizes the one agent, and in which the lesser agents appear as members of that one agent. The actions of those lesser agents are histories, and together make up the one action and the one history.' This concept action covers all past events, of which there is a record, denotes the freedom that characterizes the objects of history and the relation between the elements of any given history in which the activity of those elements is not only conserved but increased. It indicates the purpose and point of the historical scientist in his construction, and finally, it permits the temporal character that common usage gives to history and the inclusion of mechanical relations between the several elements, subordinated to the teleological relation which the history aims to present.

Dr. Hughes objects to Rickert's statement that 'history is nearer reality than natural science' and observes, "They both are real if truly science." Going on, he asserts that "the natural sciences in all cases *start from* a history, whether it be an observation or an experiment, for the fact from which the naturalist starts and to which he returns is a *past*, of which there remains only the evidence. The naturalist starts by employing historical concepts, inner causes, potentialities, and do what he may, never escapes from them wholly. The direction of the naturalist's effort is to refer all events to the motion of the thing as conditioned by the 'totality of circumstances'—a reference that reduces the thing to a condition of passivity relative to the immeasurable totality." "The physicist starts with simple histories, *e. g.*, the fall of a ball through different distances; and, noticing resemblances and differences between these past processes, these histories, finds a law which applies to all such histories, whenever they shall have occurred. . . . On the other hand, histories direct the common perception of man to the existence of agents and actions greater than it knew, presenting us with beings of greater and greater complexity and internal significance. It seeks the unity of action of a nebula or of the Milky Way."

The historian "can not run counter to universal law. . . . If he would write the history of the earth, of a man or of a nation, his account must be confirmed by its accordance with the laws of geology, sociology or of psychology, etc." "Such manifold interrelations, such interdependence and supplementation of each other's labors, exist, I would show, between historical and natural science, rather than the neat but barren antithesis between sciences of the universal and the individual, of the abstract and the real. A further advantage of characterizing action rather than individuality as the concept of history is that in the former not only is individuality included, but also the temporal, developing, continuous char-

acter of historical content, the peculiar character of historical causation, the teleological character of historical construction and the practical purpose of historical study are implied. That one term, action, in antithesis to law, thoroughly distinguishes the field and purpose of history from that of natural science."

In his second chapter Dr. Hughes deals with historical *invention*, seeking to show that the content of a history is action; in the third chapter he treats of historical *construction* and would demonstrate that 'in this construction the concept governing the historian *must be action*.'

After presenting action as the content of histories and the concept governing historical construction, in his fourth and fifth chapters, he turns to mechanics, chemistry and biology and shows that although they start with histories, they work away from and tend to eliminate action from the scientific concepts employed. While this is practically accomplished in mechanics, it becomes impossible as we pass into the region of the more complex sciences, like chemistry and biology, whose laws have a limited range.

In a sixth chapter a scheme of the concepts that have been employed is given, and in a concluding chapter the relation between history and ethics, the dependence of ethical on historical construction, is briefly but suggestively touched upon.

I realize that this analysis of Dr. Hughes's monograph is very inadequate, that much has been omitted that should have been included to make clear his position, especially the distinction between *possibility* and *tendency* that plays such an important part in his argument.

Before touching on his position as whole, I wish to say just a word about the manner in which Dr. Hughes employs the two terms 'histories' and 'evidence.' Everything that has happened is history, he tells us. That is, to be sure, the first use of the term and the vulgar use. The scientific use, however, suggests, not isolated past events, but important past events organized into a complex and unique whole. I am thoroughly convinced that we shall never reach daylight in the discussion of the relation of history to the natural sciences until we substitute some word for that first term. All past acts are no more history than they are natural science; they are simply the material with which both sciences work. This is Rickert's position, and the work of the historian and of the sociologist seems to me to bear him out. When Dr. Hughes takes exception to Rickert's statement that historical science is closer to the reality than natural science, he does not discuss his grounds for that statement, namely, that the external world is known to us through perception, that historical science tends to retain the perceivable, while natural science tends to eliminate it. Both history and natural science start with perceivable objects, but all perceivable objects are not history nor are they natural science.

The use of the word evidence as meaning 'the present fact' is a use that must strike the historian as incomplete. Evidence is a rather definite thing for the historian and a logic of history ought to conform to scientific practise. It is true that all the 'sources' with which the his-

torian works are present facts, but for the most part Dr. Hughes uses the term in a very limited sense, meaning the existence of a constitution, of a state, of a political party or of a religion whose existence needs to be explained. Such a fact, undoubtedly, is proof of action, but it is not the evidence that enables us to trace the stages of the action, its evolution or history.

As to Dr. Hughes's general position, I can speak with less confidence. Unquestionably action is the content of history. Not only do all historical works prove it, but writers upon method betray it often in their use of terms. It is also true, I believe, that the historian seeks for unity, that a history should present a single action, but is *action* a necessary antithesis of *generalization* (law)? It is not possible to generalize upon actions, to have a law of actions? In that case how would the content of histories differ from the content of sociologies, unless that difference rested on the individuality, *i. e.*, uniqueness and unity of the historical act? Does history merge almost imperceptibly into natural science?

For Dr. Hughes, history does not have humanity for its center. For him the content of history is not necessarily *Kultur*, the result of man's activities in society, and it would be quite possible to have a history with man left out. Rickert holds that humanity is the center and *Kultur* the content of all history. It may be possible to reconcile these views. Bernheim remarked long ago that 'wir können alle Objecte historisch betrachten,' but that only man in society was the natural object of *Geschichtswissenschaft*. The distinction here is based upon content and not upon method, and it might reasonably be insisted that an account of the unique evolution of the earth is, from the point of view of method, as much a part of historical science as the unique evolution of man in society. If this be true, will it not be necessary to invent new terms to distinguish the action of man in society from the action of the planets? Will distinctions not become necessary in historical science not unlike those that have arisen in natural science between biology and sociology? If so, what would be the foundation of such distinctions? Here an examination of Gottl's interesting study would be valuable. These observations call attention to the incompleteness rather than to the unsoundness of the work of Dr. Hughes, and as he expressly denies all claims to completeness, does not form a fair ground for criticism.

Finally, I am not convinced that the word action will do all that Dr. Hughes claims for it as the concept of historical construction. All actions are unique, but the historian is interested in the action that is important because of its uniqueness or individuality. Important, be it understood, not in its isolation, but in its relation to a larger whole, and important for that larger whole by just those characteristics that distinguish it from other acts. The sociologist in dealing with past acts is concerned with what they have in common and neglects the features that the historian seizes upon. Both deal with action, but in the one case the action is general, common to several series, in the other it is unique, happens but once, can not happen again, and is valuable on account of its individuality. If a generalization on social evolution may have action

for its content, i. e., if laws of social action may be formulated—and I can see nothing to prevent such formulation—it must be evident that the term *action* does not supply us with a formal concept by which we can distinguish the work of the historian from that of the sociologist. The only escape, it appears to me, would be to decline to classify sociology with the sciences of generalization or of law.

While it does not appear to me that Dr. Hughes has found in the word *action* a term that is the clear antithesis of *law* and sums up the work of the historian as the latter term does the work of the natural scientist, it is still true that he gives us a valuable new point of view, in distinguishing between *possibility* and *tendency*, in pointing out clearly for the first time that action is the content of history and that the synthesis must be characterized by unity of action. From such a brilliant beginning we may reasonably hope that he will give us in the future a treatise on the logic of history that will be complete, dealing with all the problems for which he could not find space in his thesis, and especially with the relation of history to sociology.

FRED MORROW FLING.

THE UNIVERSITY OF NEBRASKA.

Faith, Reason and Religion. F. C. S. SCHILLER. *Hibbert Journal*, Vol. IV., No. 2, 1906. Pp. 329–345.

The growing influence of the will-to-believe philosophy suggests the need of a careful estimate of its bearings upon the problems of religion and theology. From the standpoint of its critics, the new humanism may be viewed as the foe of a reasonable faith and the possible ally of the most extreme obscurantism or superstition, or as an excuse for the most unbridled subjectivism. Mr. Schiller, in dealing with the relations of faith and reason, seeks to meet these objections and to show that the new view does not mean the systematic demolition of the reason. Faith can not be regarded as antagonistic to reason, because faith is necessarily involved in the exercise of reason itself. As a name for intellectual indolence or complacency, faith may be the foe of reason, but with faith in the proper sense, that is, with the attitude which takes a desirable belief on trust and acts upon it in the hope of verifying it by action, reason can have no quarrel. The truths of reason were originally postulates assumed to meet a certain situation, and only established *ex post facto* by the experience of their practical success. Further, the faith which engenders knowledge is not a principle of unbridled individualism, for before it can be accepted as knowledge it must prove itself by works and interfere effectively in the conduct of life. While the sifting process is going on no final agreement in religious belief is to be looked for, and it may even be questioned whether there is an ultimate truth, the same for all. The plurality of opinions suggests that truth may 'prove more subtly flexible and adjust itself to the differences of individual experiences.' Both science and religion begin with postulates of faith, and transmute them through the verification of experience into axioms of reason. Theology has lagged behind science in its development, but the

religious attitude toward the facts of life has equal validity with the scientific, and rests upon imperishable foundations in the nature of the human soul.

The reader may question whether Mr. Schiller's 'flexible' and adaptable truth will really satisfy the thirst for ontology which seems to be a part of the religious nature, and so be able to meet his own pragmatic test. Again, if the growing universality of an opinion is to be taken as a test of its truth, what of the beings who hold the opinion? Are they real beings of the old-fashioned kind? Professor Royce thinks that pragmatism is a 'lonely' doctrine, and Mr. Schiller argues¹ that absolute idealism is solipsistic. The situation is interesting, and it would seem that an investigation is necessary before either side can make good its claim to so valuable a philosophical asset as a society of other selves. It is to be feared that the realist will cling to the naïve delusion of an external world until his more accomplished philosophical brethren can find some better reason for believing in the existence of their neighbors than an equally naïve 'feelin' for you.' For the rest, Mr. Schiller leaves us where Plato left us: we must take the best of human opinions, and upon that as a raft, *not without risk*, venture out upon the voyage of life.

WM. HALLOCK JOHNSON.

LINCOLN UNIVERSITY, PA.

Les anomalies mentales chez les écoliers. J. PHILIPPE et G. P. BONCOUR.
Paris: Alcan. 1905.

Leicht abnorme Kinder. W. WEYGANDT. *Sammlung zwangloser Abhandlungen aus dem Gebiete der Nerven- und Geisteskrankheiten*, 1905, VI., No. 1.

Ueber Idiotie. W. WEYGANDT. *Ibid.*, 1906, VI., Nos. 5 and 6.

In these three monographs the authors have considered most of the recent literature on the causes, symptoms and treatment of the feeble-minded. The first article of Weygandt and the book of Philippe and Boncour are of particular interest to students of psychology and education. In these the authors discuss the mental condition of those children who have a sense of morality and who are sufficiently intelligent to attend school, but who are 'backward.'

These children can profit from instruction in the public schools, but not to the extent that perfectly normal children can do. Most of them have a mental awkwardness and slowness, and consequently they are difficult to teach in classes with normal pupils. They either retard the progress of the normal or are left to themselves to remain uneducated. They are apathetic, easily fatigued, with unstable attention, often nervous. With sufficient individual attention, however, and in schools especially fitted for them, these children can be educated to a comparatively high degree of efficiency and made useful to themselves and to the community. Often when their physical defects or ailments—adenoids, obstructions to hearing, defects of eyesight, etc.—are corrected, there is an immediate improvement in mental condition.

¹ This JOURNAL, Vol. III., No. 4.

In Germany and France much attention is being given to these backward children. In Germany alone there are seven journals devoted partly or entirely to the consideration of this class. It is a matter for regret that in this country comparatively little is being done for improvement and in study of these curable cases.

SHEPHERD IVORY FRANZ.

MCLEAN HOSPITAL, WAVERLEY, MASS.

JOURNALS AND NEW BOOKS

INTERNATIONAL JOURNAL OF ETHICS. January, 1906, Vol. XVI. *The Dangers of Democracy* (pp. 129-145): J. S. MACKENZIE. - An exposition of the advantages and disadvantages of democratic government, maintaining the thesis that its one great danger is that it may fail to realize its own ideal of government of the people, by the people and for the people. *Ethical Influences in University Life* (pp. 145-157): C. H. TOY. - An address to Harvard students. The relative isolation of the college community is viewed as tending to a relaxation of outside obligations, and to social and academic seclusion, while promoting repose and concentration, simple and clear thought, high ideals, intellectual sincerity and a free interchange of constructive criticism. *Ten Years of War and the Hague Treaty* (pp. 158-171): W. L. COOK. - The writer argues that the Hague Treaty can best be made effective as a preventive of war by providing that the interposition of a buffer period of thirty days between the breaking off of diplomatic engagements and the outbreak of hostilities, which the Treaty now recommends, be made mandatory. *The Retail Method in Reform* (pp. 171-179): MARY E. RICHMOND. - Historical and contemporary illustrations are adduced to show that the most effective method of social reform is that which takes its rise from an interest in individual cases, suggesting a general program leading to changes in legislation and public opinion, completing the circle by attention to the complete and effective application of the principle thus gained. *Suicide: Some of its Causes and Preventives* (pp. 179-189): C. F. YONGE. - Gives representative opinions on suicide, discusses some of its conditions and emphasizes the value of religious faith and a strong sense of duty as a preventive. *The Industrial Millennium* (pp. 190-198): IRA W. HOWERTH. - We need a scientific industrial ideal. A rational industrial order involves economy of force, cooperation in the spirit of love, made effective through intelligent democratic control. Its coming depends on the growth of the spirit of universal brotherhood, which latter is not independent of external conditions. *Ethical Forces in the Practise of Medicine* (pp. 198-203): RICHARD C. CABOT. - The moral advantage of the physician's work lies in peculiar opportunities for achieving skill, science and friendship. *The Practical Deductions of the Theory of Knowledge* (pp. 204-227): D. H. MACGREGOR. - Idealistic epistemology seeks to establish a formal teleology, based not on special adaptations, but on the gen-

eral adaptation of mind to nature. But this relation is viewed as inner and necessary, whence it fails to prove design, which has meaning only when the mutually related factors are really distinct and contingent. The further appeal to the existence of subjective effort in reality weakens rather than strengthens the argument for objective teleology, since it tends to explain the adaptations causally. *The So-called Hedonist Paradox* (pp. 228-234): FELIX ARNOLD. — Pleasure is a real and attainable end of action. *Book Reviews* (pp. 236-262): J. H. Hyslop, *Problems of Philosophy*: JOSIAH ROYCE. J. A. Stewart, *The Myths of Plato*: J. S. MACKENZIE. A. Messer, *Kants Ethik*: W. J. ROBERTS. A. C. Pigon, *Principles and Methods of Industrial Peace*: C. J. HAMILTON. Aylmer Maude, *A Peculiar People—The Doukhobors*: M. A. HAMILTON. J. A. Green, *The Educational Ideas of Pestalozzi*. Jessie White, *The Educational Ideals of Froebel*. R. E. Hughes, *School Training*: W. J. GREEN-STREET. Thomas Stephens, *The Child and Religion*: M. MACKENZIE. Sir Oliver Lodge, *School Teaching and School Reform*: M. MACKENZIE. A. V. Dicey, *Law and Opinion in England*: C. J. HAMILTON. David J. Ritchie, *Philosophical Studies*: JAMES GIBSON. Henry Sidgwick, *Lectures on the Philosophy of Kant, and Other Philosophical Lectures and Essays*: J. S. MACKENZIE.

REVUE PHILOSOPHIQUE. December, 1905. *Le préjugé intellectueliste et le préjugé finaliste dans les théories de l'expression* (pp. 561-582): G. DUMAS. — Darwin's theory of emotional expressions is fallaciously finalistic, and Wundt's theory is with equal fallaciousness intellectualistic. The antithesis of pain and pleasure, joy and anger, etc., is wrongly taken by these scientists as a logical one; the reactions are then forcibly regarded as opposites, an unconfirmable assumption. Psychology can not explain expressions. *Reflexion et Introspection* (pp. 583-591): H. LUQUET. — The writer makes a plea for introspection as a psychological method. Introspection is related to reflection as art is to science; and just as art gives us the full individual meaning of its objects, while science renders only a practical abstraction, so too introspection gives us a disinterested presentation of the fluid whole of experiences, avoiding the one-sidedness of reflection, which ends inevitably in a psychological atomism (psychophysics or associationalism). *Rôle des sensations internes dans les émotions et dans la perception de la durée* (pp. 592-623): REVAULT D'ALLONNES. — A study of a patient suffering from visceral anaesthesia. The outward expressions of emotions were found to be intact, but the emotions themselves were absent. Perception of short time-intervals very weak, that of longer intervals wholly lacking; hypoaesthesia of all organic appetites, temperature and pain senses. The writer holds that the James-Lange theory of emotions must be narrowed so as to make internal sensations alone affective and essential to emotional life, while tactile and external motor sensations are merely contingent and largely cognitive expressions. Time-conception may persist after loss of time-perception. Likewise inclinations, which are residues of emotions, may persist after the loss of all true emotions. *La haine* (pp. 624-635): E.

TARDIEU. — An appreciation of hate, which is regarded as proceeding from the instinct of self-preservation. Its manifestations in family and social life are described; it is often a stimulus to action where other stimuli fail. Patriotism is the obverse of hatred of strange peoples. *Analyses et comptes rendus*: Pillon, *L'Année philosophique*: JULES DELVAILLE; Bel-langer, *Les concepts de cause*: M. MAUXION; Motora, *An essay on eastern philosophy*: TH. RIBOT; Heymans, *Einführung in die Metaphysik*: M. MAUXION; Petronievics, *Principien der Metaphysik*: G. M.; Schrader, *Elemente der Psychologie des Urteils*: ABEL REY; Weisengrün, *Der neue Kurs in der Philosophie*: LÉON POITEVIN; Basch, *L'individualisme anarchiste*: FR. P.; de Gaultier, *Nietzsche et la réforme philosophique*: GEORGES PALANTE; Ranzoli, *Dizionario di scienze filosofiche*: ANDRÉ LALANDE; de Gourmont, *Promenades philosophiques*: L. ARRÉAT. *Review of foreign periodicals*: *The Psychological Review*, Vol. XI.

REVISTA FILOSOFICA. September–October, 1905. *Per una scienza normativa morale* (pp. 445–466): E. JUVALTA. — A normative ethical science can include a system of relations and laws which have the value of norms only on the initial assumption that they are moral ends. The determination of an ethical norm requires (1) that it be humanly possible, and (2) that the preference given to the norm in question over other possible norms is a moral necessity. The moral necessity assumed by the author and argued in previous articles is universal justice, and the means to this end is a human society such that all its members find in their own conditions of life the same or equivalent opportunity to devote their activity to a search for the goods for the attainment of which social cooperation is a means. *La Psicologia di Tertulliano nei suoi rapporti colla Psicologia Stoica* (pp. 467–493): G. BONFIGIOLI. — Continues the author's account of Tertullian's indebtedness to Greek philosophy, chiefly to the Stoics, for material wherewith to combat the Platonic tradition used by the Gnostics. *Vicende del termine e del concetto di legge nella filosofia naturale* (pp. 494–513): A. PAGANO. — From a review of the Greek and Latin words which have had the signification of 'law' or related significations, the author concludes that the concept of law has passed through three phases: (1) a significance of strict legality; (2) the manifestation of a divine will which is, however, limited in two directions, (a) by a mysterious power ruling over things, the germ of the idea of necessity, (b) by an unalterable specific nature of things which constitutes the physical world; (3) the will which produces the law ceases to be attributed to a hyperphenomenal being, but is identified with the order of phenomena themselves or is wholly eliminated. The characters of efficiency, predetermination and necessity persist, however, but opposed by critical reflection which reduces cause to temporal succession and law to uniform and constant sequence. The two tendencies, natural determinism and indeterminism, are at present opposed one to the other. *Il meccanismo delle emozioni* (pp. 514–524): S. MONTANELLI. — A protest against the recent work of M. Paul Sollier because of his reduction of psychology to physiology. *Multa Renascentur* (apologo): F. BONATELLI. *Rassegna Bibliografica*.

THE PSYCHOLOGICAL REVIEW. January, 1906, N. S., Vol. XIII., No. 1. *The Relations of Logic to Allied Disciplines* (pp. 1-22): WILLIAM A. HAMMOND. - The paper first states briefly the conceptions of logic held by various leading philosophers from Aristotle to the present time. It then discusses in their order (1) the relation of logic as a science to logic as art, (2) the relation of logic to psychology and (3) the relation of logic to metaphysics. The author believes that, for the sake of progress in each, a strict line of distinction should be maintained between these branches of knowledge. *Some Effects of Incentives on Work and Fatigue* (pp. 23-34): WILLIAM R. WRIGHT. - The experiments consisted of ergographic tests with and without incentive. The results show that more work is accomplished under the former condition and that known impossibilities tend to decrease the total amount of work produced. The fatigue effects are likewise greater under such conditions. *Discussion: The Problem of the Subconscious* (pp. 35-49): IRVING KING. - The author takes exception to those current theories of consciousness which introduce psychic elements in one form or another for its explanation. He conceives the subconscious not as dim consciousness, nor as anything psychic or self-conscious, 'but rather as a physical mass of neural dispositions, tensions and processes.' This material is perhaps to some degree organized, and includes 'remnants of habits, experiences, both those which have lapsed from consciousness and those which have never penetrated to the central plexus.' Here are also included 'hereditary traits and tendencies which have never chanced to be sufficiently relevant to the trend of processes which lay back of consciousness to succeed in contributing to them.' *The Place and Value of the Marginal Region in Psychic Life* (pp. 50-59): JAMES BISSETT PRATT. - The feeling-mass is held to be the source of sensory and ideational experience. It is deeper and broader than these and is more closely identified with personality and character. It is also the source and guide to most of our practical activity. In a sense it seems to be more universal than all other forms of experience, for we are unable to set any limits beyond which it does not extend. In this way we seem to be linked to the whole of sentient life.

Clemens Bäumker and Georg. von Hertling. *Ist Duns Scotus Indeterminist?* Beiträge zur Geschichte der Philosophie des Mittelalters: Texte und Untersuchungen. Bd. 5, Heft 4. Münster. 1905. 8vo. Pp. xi + 139. 4.75 M.

Couturat, Louis. *L'Algèbre de la logique*. Scientia, No. 24. Paris: Gauthier-Villars. 1905. Pp. 100.

Davidson, John. *A New Interpretation of Herbart's Psychology and Educational Theory through the Philosophy of Leibniz*. Edinburgh and London. 1906. Pp. xviii + 191.

Landry, Adolphe. *Principes de morale rationnelle*. Paris: F. Alcan. 1906. Pp. x + 278.

- Meinong, A. *Ueber die Erfahrungsgrundlagen unseres Wissens. Abhandlungen zur Didaktik und Philosophie der Naturwissenschaft.* Heft 6. Berlin: Springer. 1906.
- Rand, Benjamin. *Dictionary of Philosophy and Psychology*, edited by Mark Baldwin. Vol. III. Parts I. and II. *Bibliography of Philosophy, Psychology and Cognate Subjects.* New York: The Macmillan Co. 1905. Part I. Pp. xxiv + 542. Part II. Pp. vi + 650. \$10.
- Rignano, E. *Sur la transmissibilité des caractères acquis.* Paris: Alcan. 1906. Pp. 320.
- Santayana, George. *The Life of Reason*, Vol. V. *Reason in Science.* New York: Charles Scribner's Sons. 1906. Pp. ix + 320.
- Semon, Richard. *Die Mneme als erhaltendes Prinzip im Wechsel des organischen Geschehens.* Leipzig: Wilhelm Engelmann. 1905. 6s.
- Thompson, J. A. *Herbert Spencer.* English Men of Science Series. London: Dent. 1906.

NOTES AND NEWS

PROFESSOR G. V. N. DEARBORN considers that the summary of his paper read before the American Psychological Association, at Cambridge, December 27, 1905, which was printed in the sixth number of this Journal for the current year, is unjust to the opinions actually expressed in the paper presented. Professor Dearborn objects to being understood as saying that 'the various properties of muscle protoplasm satisfy the criteria of correlation better than does the cerebral cortex.' He prefers to say that the muscles are only one of several sorts of protoplasm composing the organism, and his discussion of the muscles was intended to give one example of the fitness for correlation of protoplasm generally. Professor Dearborn objects to the assumption in current text-books that the seventeen grams of cells in the cortex cerebri correlate all the phenomena known as consciousness.

"L'UNE des découvertes les plus étonnantes que les physiciens aient annoncées dans ces dernières années, c'est que la matière n'existe pas." Thus H. Poincaré begins his article entitled 'La fin de la matière' in the *Athenæum* for February 17. He continues: "The essential attribute of matter is its mass, its inertia. It is the mass which everywhere and always remains constant, which persists when a chemical transformation has altered all the sensible qualities and seems to have made another body. If, then, one were to prove that the mass, the inertia of matter, did not really pertain to it . . . that this mass, the constant *par excellence*, is itself variable, one might well say that matter does not exist. Now this is precisely what is announced." Professor Poincaré examines the effect which the researches and conclusions of Abraham, Kaufmann and Lorentz and the doctrine of electrons should have in discrediting matter. In the light of these inquiries mass appears as a phenomenon due to electrical activity, and in this case M. Poincaré concludes, "il n'y a pas de vraie matière, il n'y a plus qu'à des trous dans l'éther."

many other similar characterizations of the purpose and nature of knowledge and of other experiences shows them to be, without exception, I think, only restatements of, if not deductions from, the same general standpoint. Realism is, however, not always accepted as being implied in these views.

There is, nevertheless, one charge which can with perfect justice, I believe, be brought against both the new epistemology and the old, namely, that so far both have been almost exclusively concerned with an investigation of our knowledge of pencils, chairs and the usual classroom paraphernalia, and very little with that kind of knowledge in the possession of which men actually know and can do most, namely, scientific knowledge, especially physics. The charge is particularly deserved in one quarter, since it is especially this kind of knowledge which also most closely fits the pragmatistic definitions which I have quoted. Convinced, then, that the knowledge and knowing of a Mach, a Boltzman, or a Duhem is as worthy of epistemological study, both for the above and for other reasons, as that of the man in the street, I purpose to consider the epistemology of scientific knowledge and knowing.³

The point of view from which I shall at present proceed is that which even the writers on the philosophy of pure experience really assume in their propagandas and appeals, namely, the common sense view that there is a plurality of individuals of the 'genus homo' endowed with something called minds, in that they are capable of having concrete experiences of various kinds, concerning which each individual may communicate with other individuals.

Concerning this point of view two statements can be made. First, if experience be regarded in those figurative ways which seem to be in such high favor with some of the 'radical empiricists,' namely, as a 'living flow,' etc., then on the whole it is in the above-mentioned stage that the *problems* concerning experience, its nature, meaning, etc., first arise. Secondly, it may be said that, even if the answer by way of the resolution of these problems should, on the one hand, point to a preceding experience more simple and without such problems, and, on the other, to a subsequent, more complex one, nevertheless the experience in which the occurrence of the problems takes place is within certain individual and subjective limits. By that I mean, as I shall later endeavor to make more clear, that the experience which forms our real starting-point, and for the resolution of

³ This is undoubtedly a large problem, including as it does such subdivisions as the purpose, validity and success, content, structure and conditions, and origin and psychology of knowledge and knowing. Some of the first of these I shall make the subject-matter of the present series of papers; the others I hope to treat of subsequently.

whose problems the acceptance in some way of experiences both before and after is demanded, is always within the limits of the physiological and empirically conscious 'you' or 'me,' to which the philosophical writer makes appeal, and which may be called, without misunderstanding, the subject.

At any rate, whether this view be regarded as tentative and demanding of much discussion, or even, as a result of this, it appear questionable, nevertheless it will serve to make our initial use of the term 'experience' fairly unambiguous, so that if, in the resolution of certain problems, it be found necessary to modify or extend the meaning of the term, the relation of this new to the first meaning will be capable of exact formulation.

Thus, on the one hand, the charge which can be brought against many current discussions, that use is made of the term experience without having removed the ambiguities in any way, will be avoided; and, on the other, it can not be urged that we are proceeding incorrectly by defining a term rigidly at the outset of an investigation whose very purpose is to find out, if possible, those characteristics by means of which the term should be defined. For while we may admit that our primary definition, although in keeping with common sense, is, nevertheless, tentative, it gives us the advantage of something definite with which to start, and from which the more detailed nature of the cognitive experience, important both of itself and for its relations to other experiences, may be made gradually to crystallize out.

Accordingly, I think that there will be little opportunity for misunderstanding or ambiguity if I begin with the statement, that among the many experiences which conscious individuals may have there is one important class, that of *needs*. As to this last term, however, I do not know that it has been sufficiently defined, although the origin of needs may have been discussed somewhat as, possibly, one of conflict, etc.* But the connotation of the term makes its consanguinity with evolutionary theory evident. In general, it may be said that 'need' in the sense in which I shall use it means a felt, *conscious demand*; a demand, too, for that which is *other than* the need itself and which shall satisfy it. This last is in accordance with the general principle which may be laid down here that the *need of satisfaction is not the satisfaction of the need*. Now it is undoubtedly a difficult matter to get at the psychology of needs, at least to make statements concerning them which shall hold good of all. Yet I shall venture the presentation of some of their important characteristics.

* Cf. Dewey, 'Studies in Logical Theory.'

THE Royal Academy of Science and Letters, of Denmark, makes the following announcement of the topic for 1906 proposed by the section of philosophy for competitive discussion: "During the latter part of the nineteenth century philosophy has been, to a great extent, concerned with the nature of knowledge, its value and its limits. During this period the term 'theory of knowledge' became a current one. In studying this question, philosophers, particularly in Germany and France, have adopted in a greater or less degree principles laid down by Kant. The aim of their inquiry has been primarily to find by methods of analysis the fundamental forms and conditions of knowledge, and it has been assumed for the most part that these forms and conditions must be determined ultimately by the nature of the human cognitive faculties. Recently, however, the problem has been treated from an opposite point of view, namely, that the actual development of knowledge, its conditions and its processes, must be determined wholly by necessities which have to be met, and by goals to be reached. This method known variously as the 'economical,' 'biological,' 'pragmatic,' etc., theory has had already a certain success. For the sake of brevity we will call the two theories in question *criticism* and *pragmatism*. Since it is clear that there must be, on the one hand, a certain relation between the forms and the conditions in accordance with which the human faculties of knowledge manifest themselves, and the necessities, on the other hand, which knowledge is called upon to meet, and the tasks that it succeeds in performing, the Academy of Science at Copenhagen proposes the following problem for competitive discussion: To examine, from the point of view of the theory of knowledge and from the point of view of psychology, the relation between *criticism* and *pragmatism*." The gold medal of the Academy will be awarded as a first prize, and competing essays must be ready by October 31, 1907. Further particulars may be had from the Secretary of the Academy, Professor H. G. Zeuthen, at the University of Copenhagen.

IN the Yale department of philosophy, R. P. Angier, Ph.D. (Harvard), at present assistant in the Berlin laboratory with Professor Nagle, has been appointed instructor in psychology. Mr. E. H. Cameron, M.A. (Yale), at present fellow in psychology and philosophy at Yale, has also been appointed instructor in psychology. Professor G. H. Palmer, of Harvard, has been appointed lecturer in ethics, and Dr. Henry Rutgers Marshall lecturer in esthetics and psychology.

PROFESSOR HUGO MÜNSTERBERG gave the last of the Harvard lectures for this year at Yale University, on March 16. His subject was 'Science and Idealism.'

DR. F. KRUGER, docent in philosophy at Leipzig and assistant in the laboratory of Professor Wundt, has accepted a chair of philosophy in Buenos Ayres.

PROFESSOR GEORGE H. HOWISON, of the University of California, will give a course of lectures at Yale University on 'The Human Import of Philosophy.'

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

THE GROUND OF THE VALIDITY OF KNOWLEDGE¹

I. NEEDS AND THE TRANSCENDENT

IN these days, when it would perhaps not be incorrect to speak of at least an increase of interest in the epistemological problem, as indicated by current discussions in England, France and America, the problem of the cause of this increase is an attractive one to the social psychologist. Disclaiming any attempt to have studied this question exhaustively, I venture, however, by way of introduction to the discussions of this paper, to state the results of some reflection on the matter. When we find it stated, for example, that 'psychology is the key to the question of truth,' that 'truth is a form of value,' a '*gradual* achievement and construction of a common world,' the thought is suggested that that view which has been of such predominating influence on practically all other fields of thought, namely, the Darwinian theory of evolution, has at last, though somewhat tardily, reached the field of philosophy and is the leaven to the rising loaf. My conviction that 'evolution' is the new standpoint, quite strikingly different in its logical import, from which knowledge and experience are now being studied, is strengthened when I find it stated, also, that 'thought is an instrument of *adaptation*,' which, however, 'need not always copy its objects' and in which 'what works best is truest.'² This is indeed the language of the evolutionary theory, and is, as I believe and shall endeavor to demonstrate, on the whole quite realistic in its implications. Examination of the

¹The present is the first of a series of four papers in which I purpose to deal with the various aspects of the above problem; this I might also state as the Epistemology of Scientific Knowledge and Knowing. The present article is to a certain extent introductory, and, therefore, I trust its incompletenesses will be pardoned. The subsequent papers will treat of such matters as implication, the meaning of 'in experience,' the transcendence of knowledge, perception and the 'correctness' of data, and the 'structure' of scientific knowing.

²Professor William James in the preface to the English translation of Hödding's 'Problems of Philosophy.'

many other similar characterizations of the purpose and nature of knowledge and of other experiences shows them to be, without exception, I think, only restatements of, if not deductions from, the same general standpoint. Realism is, however, not always accepted as being implied in these views.

There is, nevertheless, one charge which can with perfect justice, I believe, be brought against both the new epistemology and the old, namely, that so far both have been almost exclusively concerned with an investigation of our knowledge of pencils, chairs and the usual classroom paraphernalia, and very little with that kind of knowledge in the possession of which men actually know and can do most, namely, scientific knowledge, especially physics. The charge is particularly deserved in one quarter, since it is especially this kind of knowledge which also most closely fits the pragmatistic definitions which I have quoted. Convinced, then, that the knowledge and knowing of a Mach, a Boltzman, or a Duhem is as worthy of epistemological study, both for the above and for other reasons, as that of the man in the street, I purpose to consider the epistemology of scientific knowledge and knowing.³

The point of view from which I shall at present proceed is that which even the writers on the philosophy of pure experience really assume in their propagandas and appeals, namely, the common sense view that there is a plurality of individuals of the 'genus homo' endowed with something called minds, in that they are capable of having concrete experiences of various kinds, concerning which each individual may communicate with other individuals.

Concerning this point of view two statements can be made. First, if experience be regarded in those figurative ways which seem to be in such high favor with some of the 'radical empiricists,' namely, as a 'living flow,' etc., then on the whole it is in the above-mentioned stage that the *problems* concerning experience, its nature, meaning, etc., first arise. Secondly, it may be said that, even if the answer by way of the resolution of these problems should, on the one hand, point to a preceding experience more simple and without such problems, and, on the other, to a subsequent, more complex one, nevertheless the experience in which the occurrence of the problems takes place is within certain individual and subjective limits. By that I mean, as I shall later endeavor to make more clear, that the experience which forms our real starting-point, and for the resolution of

³ This is undoubtedly a large problem, including as it does such subdivisions as the purpose, validity and success, content, structure and conditions, and origin and psychology of knowledge and knowing. Some of the first of these I shall make the subject-matter of the present series of papers; the others I hope to treat of subsequently.

whose problems the acceptance in some way of experiences both before and after is demanded, is always within the limits of the physiological and empirically conscious 'you' or 'me,' to which the philosophical writer makes appeal, and which may be called, without misunderstanding, the subject.

At any rate, whether this view be regarded as tentative and demanding of much discussion, or even, as a result of this, it appear questionable, nevertheless it will serve to make our initial use of the term 'experience' fairly unambiguous, so that if, in the resolution of certain problems, it be found necessary to modify or extend the meaning of the term, the relation of this new to the first meaning will be capable of exact formulation.

Thus, on the one hand, the charge which can be brought against many current discussions, that use is made of the term experience without having removed the ambiguities in any way, will be avoided; and, on the other, it can not be urged that we are proceeding incorrectly by defining a term rigidly at the outset of an investigation whose very purpose is to find out, if possible, those characteristics by means of which the term should be defined. For while we may admit that our primary definition, although in keeping with common sense, is, nevertheless, tentative, it gives us the advantage of something definite with which to start, and from which the more detailed nature of the cognitive experience, important both of itself and for its relations to other experiences, may be made gradually to crystallize out.

Accordingly, I think that there will be little opportunity for misunderstanding or ambiguity if I begin with the statement, that among the many experiences which conscious individuals may have there is one important class, that of *needs*. As to this last term, however, I do not know that it has been sufficiently defined, although the origin of needs may have been discussed somewhat as, possibly, one of conflict, etc.* But the connotation of the term makes its consanguinity with evolutionary theory evident. In general, it may be said that 'need' in the sense in which I shall use it means a felt, *conscious demand*; a demand, too, for that which is *other than* the need itself and which shall satisfy it. This last is in accordance with the general principle which may be laid down here that the *need of satisfaction is not the satisfaction of the need*. Now it is undoubtedly a difficult matter to get at the psychology of needs, at least to make statements concerning them which shall hold good of all. Yet I shall venture the presentation of some of their important characteristics.

* Cf. Dewey, 'Studies in Logical Theory.'

In general, it may be said that the presence of the need is characterized or accompanied by a 'feeling' or experience of 'conflict,' of discordance, or of discrepancy. Keeping to our view of experience as subjective, the 'conflict' is not one of need with need in every case, but may be between experiences of another kind, or of an individual with his environment. The range is perhaps almost unlimited. But either accompanying or immediately subsequent to the 'conflict experience,' which may perhaps be taken as typical, there is the felt-need of a *readjustment*. If the readjustment is effected, either this is to be regarded as a new experience or the original experience has persisted in the 'living flow' and, as modified, has changed.

As concerning this, two important principles are to be noticed. First, that that to which, or according to which, the readjustment is to be made or is to take place may vary as the demand for readjustment varies. Secondly, that the need for readjustment dictates nothing immediately and directly as to the way in which the readjustment shall or may be effected.

Now, without attempting to get at the meaning of 'need' further than that which the above discussion presents, in virtue of the first of the above principles I shall venture to offer a *classification of needs* which will suggest at the same time differences in that to which the readjustment relates. The scheme which I present may be faulty in many ways, incomplete, and the classes may be not mutually exclusive; but I do not offer it as to any great extent final; few classifications have that honor. But it would seem to be of advantage to, if not even necessary for, our subsequent discussions, especially if, in treating of the problems which have been enumerated, at least one kind of knowledge is to be regarded as 'an instrument of adaptation,' to indicate important differences between the need of which this may be the means of satisfaction and other needs.

The most important classes of needs may be arranged as follows: (1) Sensuous-physiological, (a) native, (b) acquired; (2) emotional, (a) religious, (b) ethical; (3) esthetic; (4) intellectual, (a) logical, (b) alogical. The alogical, possibly also the logical, I would divide into (a) theoretical, (b) practical. Of the first three main divisions of this classification I shall not make much use; they are presented chiefly for the sake of completeness. But important and worthy of special attention are the intellectual needs and the means of their satisfaction.

Now it may be that all needs are those of readjustment and of means to this; and if so, and if the readjustment be looked upon as *furthering and conserving life* and so the very *possibility* of subsequent and *additional experience*, then all may be looked upon as

biological in the broad sense of the term, and their close relationship to evolutionary theory becomes evident. Yet such a view carries with it the subordination of certain needs as means to others as ends and, finally, of all as means to one as an ultimate end, which may well be, indeed, just this furthering and conserving of life. But if this view is taken, then there is certainly one class, the alogical needs, whether, if many, they be coordinate or some subordinate, which, together with the means for their satisfaction, are of all the most appropriately designated as biological. It is just these which are implied by the view that 'thought is an instrument of adaptation' and that 'what works best is truest.'

That this is so will be made clearer, perhaps, by an explanation and a contrast of 'alogical' with 'logical.' By 'logical need' there is meant the *generic* felt-demand for formal *consistency*, so that when in the concrete case a conflict or discordance is experienced there is also the need experienced of readjusting the first experience so that it or the new experience will conform with this ideal of consistency. The concept of readjustment here evidently is meaningless unless it involves both conflict and removal of this; and both these can be stated in this case only in terms of an ideal consistency. The latter is presupposed in some way, as in some respect 'other' than the concrete experience which should conform to it; and although the questions of its nature and origin may be most important and admittedly difficult of answer, yet for the purpose of this paper it is not necessary to consider them.

By the 'alogical need' I may say that, first, and especially if all other needs are subordinate as *means* to the furtherance and preservation of life as *end*, that this last might be regarded as a felt alogical need, namely, the need to live. But whether this be called end or need—the terminology is indifferent—it may well be also that the ideal of logical consistency itself has originated by abstraction and generalization from that which has proved to be a successful means to such an ultimate end; and that even now in special cases the logical need is to be subordinated to this.

However, even if we admit all this, there yet appears side by side and coordinate with the logical need an *alogical in the narrower sense* of the term, as indicated in our classification. This alogical need arises, or is experienced primarily, in the conflict or discrepancy between an individual and his environment. The latter may press and threaten, and accordingly there is the need, even the necessity, of readjustment, by way of acting, of doing something, hit or miss. Hence formal consistency is not here the ideal, but, whether this be observed as a means as far as it will go, or whether it be limited or given up, *success* is what is wanted, needed in the process and means

and result of readjustment; in fact the latter is meaningless here without that realization. The *generic* felt-need here is for *success*, and in the specific case the readjustment must conform to this ideal. But, in turn, it can be said that for success there must be also another 'conforming' which shall constitute its very nature and conditions and origin, and the characteristics of that which in the specific case is the successful readjustment.

Accordingly, the justification of calling the needs here involved alogical comes, first, from the ideal, success as opposed to formal consistency; secondly, from the difference in the means to this adjustment; formal consistency shows itself to be impotent after a certain point to satisfy the need; after that action is necessary, but can proceed only on a non-rational basis, by trial and the finding out of that which works best; thirdly, and accounting perhaps for the first two, at least in part, from the nature of that to which the cognitive experience as readjusted in some way conforms, in which 'conforming' success consists or on which it is dependent.

It is to these needs, then, that, chiefly for the sake of raising certain questions in as pointed a manner as possible, I shall refer hereafter as biological or alogical. They appear most sharply outlined when, granting the preservation and furtherance of life to be the ultimate end, there is the need for a means which will bring about or constitute the readjustment; for a means, therefore, through whose reliability, purely logical methods having failed or being known to be fallible, success in meeting the demand can be counted upon.

Now, undoubtedly, that kind of knowledge which is most capable of filling this rôle of a reliable means, etc., is scientific knowledge, in the usual specific sense of the term. Science can do this, because, side by side with or through the medium of that which may be called 'theoretical' science, yet in which the alogical element is also present, it gives us a *foreknowledge* of things and events. This is especially true of the physical sciences, and so, for the purpose of making my points as clear and in as simple a form as possible and yet illustratively, I shall consider the foreknowledge made possible by the physical sciences.

It is of importance to note that as concerning this capability science appears in marked contrast with philosophy and other knowledges. The former can and does 'make a difference' when appeal is made to it, for example, in the case of life and death. For that reason, and in that respect, it is important, and philosophy is not. And if it is all a matter of need, and although success in satisfying one need may be as high a good as the satisfying of another—for men have preferred death to subversion of their convictions—nevertheless upon success in meeting the demands of a threatening environ-

ment may depend even the having of the other needs, to be satisfied, if possible. Either succeed or succumb is a very real and unmistakable dilemma. But before I enter upon the discussion of this, the main question of my paper, I would refer briefly to the *structure* of that science which has been chosen as an example, namely, physics.

It may be said that in this use is made almost exclusively of 'symbolic methods.' The symbols stand for, in part at least, the qualities of things. Through the use of instruments of measurement they get a definite numerical value, giving both 'intensities' and 'extensities,' and it is made possible to discover empirical and causal laws, expressible in the form of algebraic equations. For these, oftentimes at least, a choice between different principles of interpretation is presented. Similarities and analogies among these laws lead up by repeated steps to abstract and general laws and principles, *e. g.*, those of thermodynamics. The latter form, too, the domain of theory, which is a kind of classification of empirical (in the broad sense) laws, and of hypotheses. From the theorems and propositions in this domain, the laws must be deducible according to the rules of the calculus and of logic, and be capable of exact confirmation again by the use of instruments.⁵

Although this account is brief, it serves to illustrate and make clear that which is one of the important purposes of science as a means or method of readjustment. It is to discover and describe connections between qualities or changes of the same or of different things in such a way and by such methods that, starting, say, with the perception of one, it will be possible to go in inference to one as-yet-unperceived, but under certain conditions to-be-perceived. This constitutes prediction, 'knowledge' of the future. Only if a reliable means for meeting this first need of a foreknowledge, which shall constitute an 'instrument of adaptation,' is discovered, can the more important need of establishing conditions favorable, or of inhibiting those unfavorable, to life be met.

If the inference-prediction, as it may be called in order to indicate both its nature and the way in which the general alogical purpose of scientific knowledge is attained best, is to be the means of or is to constitute the readjustment, then the question as to *what constitutes the conditions* and the procedure of *successful prediction* is of the utmost importance. For even upon the conviction that success is possible or not, as well as upon knowledge or ignorance of its conditions, there may depend alternative practical outcomes. In answering this, at the same time that it is to be recognized that the 'need

⁵ Cf. Duhem's 'La Théorie physique; son objet et sa structure,' Paris, 1906, and 'L'évolution de mécanique,' Paris, 1903. Also the writings of Mach, Poincaré and Helm.

of readjustment' is in no case the satisfaction of that need, it can be said also that the need itself dictates nothing directly and immediately as to the way in which the readjustment is to be effected. Success alone is the goal.

First, then, let us ask: Can the *mere* system of inferences, taken on the one hand as a plan or a means of foresight, and on the other as a logical and psychological (natural) event, be of itself the sufficient condition of the ensurement of success?

To this the reply may be made, by some at least, that it may be this provided that 'correct data' have formed the starting-point of our inductions and that the deductions are formally correct. Even admitting this in a general way, the status of our question is only slightly altered to that of what constitutes the correctness of data. This I shall discuss in detail in a later paper of this series. But aside from this reply, and perhaps, as it will turn out, the one leading into the other, it may also be answered that, granting the formal correctness of the inference and the correctness of the data, the *ground for its validity* in the sense of 'successful working' is *external to the inference itself as a 'logical and psychological event.'* If this were not the case, then were all formally correct inferences successful. This necessity of an external ground is indeed admitted, as I shall endeavor to establish, in the very demand for 'correct data,' whether this term, on the one hand, be used in a limited sense or, on the other, the 'correctness' be a characteristic dependent upon or derived from, and so a part of, a system.

In these problems I believe that we are biting very near to the kernel of the epistemological nut, which I shall now take my turn in attempting to crack.

Let us start with the consideration of the actual procedure of making the inference, and assume that this is a case of predicting on the basis of a present perception that at a definite future time a perception will either take place or be possible. The inference here is, then, a sort of 'mental transition' in time.

Psychologically the making of the inference consists of a succession of symbolically formulated propositions, accompanied, let us grant, by a rational feeling of their formal correctness. The symbols are either perceived or, in the case of silent thinking, presented as symbol concepts, and they have a meaning. Yet there is evidence to show that this meaning is given or is presented very *inadequately* in the form of images (*Auschauungen*). But if not in images, the meaning is either in the 'fringe' or not in consciousness at all. Yet the propositions are understood! To this I shall recur.

It may also be of great importance that by virtue both of being able to use and of making actual use of such symbolic methods, *rela-*

tions are known which are never gotten in perception or anything patterned after it, and known, furthermore, with a certainty and exactness obtainable in no other way than by these methods. But, be this as it may, it will be granted for our present purposes that the inference consists of a series of propositions each of which follows of necessity, by virtue of the principles of logical implication and the rules of the calculus, from the preceding. That is, it is to be granted that the inference process is absolutely formally correct, so that by its every possible repetition the same conclusion is reached. It presents, then, a concrete case of logical necessity, uniformity and regularity.

Assuming now that the whole inference process has conformed to these requirements, what, we may ask, is our actual *attitude* psychologically toward the 'coming true' of that which is thereby predicted? Suppose it to be one of 'fair' certainty because it is felt that, side by side with formal correctness, the data also from which the premises have been derived have been correct. Then is not this certainty based on the further conviction that the correctness of the data carries with it or consists in their connection according to universal laws with that which is to occur in the future? Or that, if correctness of data means something else, namely, an unequivocal and determinate relation between the act of perception and the object perceived, is not our certainty based on the conviction that there is also a *regularly* and *uniformly* acting something which, as either implied by the uniformity or as supplementing this, will also *persist*, and bring about the predicted occurrence and so the possibility of its perception, and for which the inference process in some way stands? Is not our attitude also this, and do we not act upon it as a conviction, that, having set up certain conditions, perceived therewith, it makes no difference with the 'coming true' of the prediction what the *order* of intervening perceptive acts may be; that be this order what it may, the predicted events, say, will take place and be perceived, provided certain subjective conditions of perception are present? Is it not part of that attitude too that the prediction as a psychological event may cease to exist, may in fact be forgotten, without this interfering with its coming true?

With the acceptance of the implied *affirmative* answer to these questions, it may also be admitted that this is perhaps a devious way of putting very trite matters. But I wish to indicate therewith, as pointedly as possible, first, that the practical attitude, one acted upon and in general justified by experience, is that the ground of the success of inference is external to this both as formally correct and as a psychological or, if one prefer, as a natural event. And secondly, that this ground is to be found (how, we shall see later) in

an order and uniformity, permanent and persistent, and 'other than' and yet in some way 'corresponding to' the logical and psychological order of the inference itself. What the manner of this correspondence is, is, of course, one of the fundamental problems of knowledge.

I will take it for granted, then, that the practical attitude is that such an order, universal, without exceptions, in some sense persisting, is *demand*ed. What is the source of this demand, or in what conflict of discordance does it arise as something needed? The answer to this can, I believe, be stated in a twofold way.

In the circumstances of a 'readjustment' by way of prediction and foreknowledge, the desideratum is, evidently, success. Now in the first place, it is clear that, for example, with a certain event predicted, if this should not occur and so make possible its perception, assuming the subjective conditions for this to be present, there would be conflict or discordance. For the removal or avoidance of this there *must* be, accordingly, something persisting, for one thing, and, for another, acting with a regularity and uniformity to bring about the event and, with the cooperation of subjective conditions, its perception. Such a persisting regularity and uniformity does not mean necessarily that, for example, the same causes are to be present and are to bring about the same effects. It may mean this, but also that there is an accumulative action analogous to that of a series. In this way the regularity and uniformity can be made entirely compatible with *individuality*. And, in the second place, whatever may be the origin of our 'universal laws,' it will be admitted that they as judgments in some way express, or point to in the manner of *transcending* themselves, as I shall show later, an order and regularity and unequivocalness of causation. Accordingly, with an event predicted as a special case of or as derived from such a universal law, if for any reason, particularly a subjective one, the perception does not take place, then seemingly there would be a conflict by way of an exception, a case negative to universality, unless this last could be saved in some way. If, accordingly, it is only by such *universal* judgments that inference and alogical knowledge in general are possible, then an order and regularity with no exceptions is *demand*ed to resolve such a possible conflict as the above, to 'correspond to' the universality expressed in the judgment, and to 'fill out' those *negative cases* constituted by the absence of the act of perception. With such possible 'conflicts' and the means demanded for their resolution in mind, and admitting that the order, etc., implies persistence or permanence, as in a 'series,' let us ask where it can be found.

Evidently it is not legitimate to look to the inference itself in its psychological or logical aspects for the order which is de-

manded. But may not this be in the series of conscious events? Now undoubtedly there is some order to be found here. But in the first place, as we have seen, the practical attitude is that the order of the conscious events intervening between the time of the inference and that of the predicted event is indifferent. Conversely, and as a justification of this attitude, it will have been experienced that the event takes place after a preceding lack of such order. Is it not possible, then, to find the required order somewhere or in some way within the entire series of conscious events? To this it must be replied that there the order is always a limited one. And limitation, even to the extent of one exception, amounts to an absence of that uniformity which is demanded under the circumstances.

The required order is not to be found either in the inference itself or in the series of conscious events. May it not, then, be 'in' the concept of order or 'in' the universal judgment as a causal law, *admitting* the concept to have originated as above suggested? To this it must be said, anticipating our future discussions somewhat, that the required order is not 'in' the concept or the judgment in the sense of 'contained in,' but that it is in some sense 'beyond.' It can be 'in' the concept or the judgment, only in a manner quite compatible with its being 'beyond' at the same time. In this simultaneous relation of 'in' and 'beyond' the concept and judgment can be shown to transcend themselves. What the *nature of this transcendence* is, forms one of the important questions of my paper, to be discussed fully later. Since now the order is not one of conscious events taken either as an entire or as a partial series, and yet *an order somewhere is absolutely necessary for the success* of the inference, we must go elsewhere for it. It can be found only in that which, if conscious events be called *immanent*, may be termed the *transcendent*, namely, that which is 'other' than any and every concrete conscious event in you or me or any one else. The appropriateness of this term appears in its correlation with that characteristic which I shall endeavor to show holds good of all cognition, namely, its 'transcending itself,' its 'pointing' to an 'other.' Thus it will result that it is the transcendent order 'beyond,' to which the causal law and the *concept* of causal uniformity and regularity refer in transcending themselves, at the same time that they express it, and that it is in some manner 'in' them. Accordingly, as standing in this relation, it must be admitted that the 'transcendent' is known. The further details of this, constituting as they do the 'structure' of the 'knowing experience,' I shall endeavor to develop. The problem may be stated: How is it possible (or in what manner is it) that that which is transcendent to consciousness and is order, regularity, etc., should be known 'in' consciousness, whose events are characterized by a

lack of uniformity, etc.? But that it is known I hope further to prove.

Accordingly, too, I hope to anticipate the possible criticisms of the use of the term transcendent which might be made because of its historical implications, etc. From the above it is evident that by it I do not mean 'thing-in-itself.' Furthermore, its use is justified not only through its correlation with the reference of the cognitive experience beyond itself, but also because of its convenience as a term which shall include in its meaning the characteristics of order, regularity, unique and unequivocal causation, permanence, unalterability and independence. All these, I shall endeavor to prove, are both *known* of it, and *demand*ed as conditions for the success of alogical knowledge. And because of them the transcendent will appear to be also the *source* of knowledge and of needs. But the order as a 'demand' order is not one experienced in all its elements. It is experienced *completely* only in the sense that it is *demand*ed as *complete*. Perception, it might be said, granted that it transcends itself and points to an *object* of perception, gives us only a limited order from which we abstract the concept. But the concept in its reference points to an unlimited and universal order, which, filling in the 'negative cases,' is 'there' whether the perception is or is not.

In general we may conclude, then, that the need for a reliable means for the resolution of either one of the two typical conflicts which have been presented can be met only by a 'transcendent' which is itself order and regularity, causal agent, persistent and permanent. Such a transcendent may be said to be the fundamental condition for the success, and therefore truth, of all alogical inference and thought. It is the ultimate cooperating means by which all alogical readjustment is to be effected, the fundamental postulate or implied presupposition of all physical science.

Further considerations of the nature of the demand for the transcendent and of its relation to experience will form the subject-matter of the next paper of this series.

EDWARD G. SPAULDING.

PRINCETON UNIVERSITY.

DISCUSSION

PROFESSOR CALKINS'S MEDIATION

TO the uninitiate hearer, Professor Calkins's President's Address may well have seemed to be a 'reconciliation' not unlike that of the wolf and the lamb when they lay down together, the lamb in-

side. For while she appeared to maintain that functional psychology has a field that structural psychology can not occupy, there was no corresponding defense of a peculiar domain for structural psychology. Whether or not such an interpretation is ultimately correct, the proposed treaty of peace contains articles that could hardly be satisfactory to either party.

For example, the functional psychologist ought surely to deny as emphatically, at least, as the structural psychologist that there are functional differences to which no structural differences correspond. Even though it be proved, as the argument of the address implies, that in a case of visual hallucination the visual imagery is indistinguishable from that of a case of normal imagination, we shall still not be driven to conclude that the self has intervened by royal prerogative; it is quite open to suppose that there are concomitant structural features, due to various bodily organs, that condition the abnormal functioning. This hypothesis could hardly be disproved by introspection, though Professor Calkins's uniform reluctance to admit the presence and importance of features of consciousness too vague to be discriminated as definitely this or that sensation would doubtless lead her to reject it. There would still remain, however, other hypotheses more in accord with her own system, for the whole field of non-visual structure lies open. In any case the presumption in favor of some sort of structural modification seems irresistible.

Again, some structural psychologists will maintain as strenuously as any functional psychologist (though for partly different reasons) that to cut off structure so completely from process is to abolish even its structural character. They would hold this to be the fallacy at the root of her treatment of the 'attributes' of sensation as 'elements,' and would say that such an analysis misses the structure of consciousness as such,—as if bricks and mortar rather than floors and walls and roof were called structural elements of a house.

Even more important, however, is the question whether she does not read the abstraction of structure from function so strictly as to undermine all scientific psychology whatsoever. In the first place, if the divorce is made complete, all tests are at once ruled out. When one observer says that blue differs from red more than from yellow and another says that blue and yellow differ from each other more than either from red, both statements are doubtless authentic autobiography, but neither is by itself science. If I try to choose between them, ignoring all functional relations, I simply add a third autobiography. Unless I can find out what is the function operating in each case, there is no further progress except by counting heads and saying, 'Blue differs from yellow more than from red—to most people.' In regard to the more important differences the case is not a whit

otherwise; we must say, '*As far as psychologists have reported, blue is more like green than like sour, and is therefore probably a color.*'

Indeed, the whole ground for a distinction between the important and the unimportant has disappeared. Red is in one way more like warm than like blue, and there is left no means of knowing with which to classify it. Classification is, of course, always teleological, and the end that determines sound scientific classification is ultimately explanation, else the Linnean system of botanical orders would be on a par with the natural system,—indeed, 'natural' would be a misnomer. Now Professor Calkins, at least, would hold that 'explanation' and 'function' refer to a backward and a forward reading of the same relations.—Or one may say that a classification is of worth just in so far as it is based on 'significant' features, and significance is a matter of function.

But the thoroughgoing functional psychologist maintains, I suppose, not only that function directs our selection as we classify, nor even merely that it has created the likenesses and differences that we select (as we imply when we say that the present characters of consciousness have arisen through experience), but also that it constitutes those likenesses and differences. If we say, *e. g.*, that red is like warm in one way and like blue in another way, 'way' seems to throw us back upon function, whatever view we take of likeness. Hence the proposed reconciliation, though it might appear to the casual reader to offer terms favorable to the functional psychologist, really asks him to abandon his central position. For if the reply were made that, even though every phase of consciousness were thus constituted by function, in the study of structure we abstract from that constitution, he would still insist that if there is any sense in which we can perform the remarkable feat of ignoring constitution in order to study structure, that sense must at best throw us back into the region where our statements, even if taken as mere autobiography, become either invalid or meaningless. He will defy us to perform any introspective abstraction that will so cut off red from its functional relations as to assure us that if we got it through our tongues it would still seem like blue. He will further maintain, if I understand his meaning, that the quality red is itself functional, and that to this fact the universality that makes it namable bears witness.

There is nothing to show that Professor Calkins expected her exposition to be accepted by the two classes of psychologists. The contention that she does make, *viz.*, that her view of the self as the primary psychological fact furnishes all that either structural or functional psychology needs, seems amply justified. In fact, so long as we keep clear of the metaphysical implications which she herself excludes from the province of psychology, this doctrine of the

self, if read sympathetically and not polemically, may be taken as only another way of putting the view of, *e. g.*, either Professor Titchener or Professor Angell. Thus in its central point the address is really mediatory. But it would appear doubtful whether this mediation could be accepted in the form in which she proposes it; for many psychologists on both sides would agree, in part for coincident reasons, in rejecting her view of the relation of structure to function and of the nature and range of each.

MARY S. CASE.

WELLESLEY COLLEGE.

REVIEWS AND ABSTRACTS OF LITERATURE

The Life of Reason or The Phases of Human Progress. GEORGE SANTAYANA. New York: Charles Scribner's Sons, 1905. Vol. I., *Reason in Common Sense*, pp. ix + 291. Vol. II., *Reason in Society*, pp. ix + 205. Vol. III., *Reason in Religion*, pp. ix + 279. Vol. IV., *Reason in Art*, pp. ix + 230.

In the addresses delivered last year at the many memorial celebrations of the late Herbert Spencer's life and work, there was one very common theme: it was the anachronism of such an encyclopedic program as Spencer attempted—an anachronism which even the Hegelians of Spencer's day discovered in the similar ambition of their master, and one, it was said, which Spencer would have avoided had he possessed a larger historical knowledge and appreciation. And it was freely predicted that Spencer's attempt would be the last of the kind to be seen for many generations.

In the face of the extended currency of such comment among philosophers, to say nothing of the cynical attitude of scientists, it must be as significant as it is interesting that one who can not be suspected of any lack of large historical orientation—one, indeed, whose method is historical—deliberately, 'with malice aforethought,' sends through the press within a year a volume of what may be called first principles, a philosophy of society, a philosophy of religion, a philosophy of art and a philosophy of science.

To be sure, we are in the midst of a great revival of metaphysical interest. But the products of this revival thus far, as presented in the works of Mr. Bradley, Professor Royce, Professor Fullerton and Professor Taylor, have been in the main of the systematic formal type inevitable in abstract metaphysics. Professor Santayana's work, however, is of a different character. He is interested in tracing the effect of the method upon the content. He is concerned in showing the connection between the general conceptions of reality, truth and goodness and their conditions and effects in society, religion, art and science. In his own sentences, "The problem is to unite a trustworthy conception of the conditions under which man lives with an adequate conception of his interest"; again, "Starting with the immediate flux in which all objects and im-

pulses are given, to describe the life of reason; that is, to note what facts and purposes seem to be primary, to show how the conception of nature and life gathers around them, and to point to the ideals of thought and action which are approached by the gradual mastering of experience by reason" (I., p. 32).

And Professor Santayana is fully aware of the proportions of his task. He hastens to nip in the bud any suspicion of quixotism by saying that such a program 'would be beyond the powers of a writer in this age, either to execute or conceive, had not the Greeks drawn for us the outlines of an ideal culture at a time when life was simpler than at present and individual intelligence more resolute and free.'

In general, of course, Professor Santayana's courageous attempt, as all others, must be justified by its fruits. But I can imagine it quite possible for him to say that such an attempt is not only justified but necessitated in advance by his very conception of the place of reason in experience. An inkling of this appears in the subtitle itself, the whole caption being 'The Life of Reason, or the Phases of Human Progress.' The implication is that the character and function of thought is to be discovered not by isolating it and attempting an analysis of it as 'pure' reason, but by observing reason at work in the world, catching it in the act, taking it in its context in the whole concrete stream of experience. The attempt to discover the nature of reason apart from its products leads to a monstrous misconception of it and the proposal to substitute this changeling for normal reason, for reason as it is in operation, is called 'visionary insolence.' "Retrospective self-consciousness is dearly bought if it inhibits the intellect and embarrasses the inferences which in its spontaneous operation it has known perfectly how to make" (I., p. 29). If, then, the nature of reason is to be discovered only by observing it at work in science, in religion, in art and in social organization, is it, after all, presumptuous to propose to describe the processes, the phenomena and the results in which the nature of reason, even for one proposing to give the most abstract account of it, must be revealed?

What, then, is the life of reason, or, conversely, what is the rôle of reason in life? The reviewer has to confess that in the end the answer does not appear so univocal as the introduction promises. The problem centers in the relation of reflection to impulse. In other words, in the sort of 'efficacy' ideals have. In the introduction ideals, ends, constructed in reflection, are apparently regarded as actually organizing the material of habit and instinct. Here reason is defined as 'efficacious reflection.' And the 'efficacy' here consists not merely in an 'added content' which it brings, but in the added *function* of control. Hence we read, "To the ideal function of envisaging the absent, memory and reflection will add . . . the practical function of modifying the future. Vital impulse, however, when it is *modified by* reflection and *veers* in sympathy with judgments pronounced on the past, is properly called

reason" (I, p. 2). "The life of reason will, then, be a name for that part of experience which perceives and pursues ideals, all conduct *so controlled*, and all sense so interpreted as to perfect natural happiness" (p. 3). Again, "In the life of reason, as it were brought to perfection, intelligence would be the universal *method of practise* and its continual reward. All reflection would then be *applicable in action* and all actions fruitful in happiness" (p. 5, italics mine). Here we are very properly warned that this controlling, instrumental character of thought does not make it a mere means. It does not prevent its having an immediate value of its own. But though reason may in this sense be 'its own excuse for being,' yet in order to *be*, it must *do*; and its 'doing' is just the work of converting isolated impulses and instincts into a mutually stimulating and checking, i. e., controlled, system.

But when we reach the chapter on 'How Thought is Practical,' one is puzzled to find thought losing this character of control and becoming a mere 'expression,' 'effect,' 'register,' 'celebration' of 'mechanical,' 'material' activity, into which now all dynamic efficacy is transferred. We now read, "Thought is nature's concomitant expression or entelechy, never one of her instruments" (I, p. 223). "Consciousness itself is not dynamic. . . . It is merely an abstract name for the actuality of its random objects. All force, implication or direction inhere in the constitution of specific objects" (I, p. 220). "Preferences are in themselves, if the dynamic order alone be considered, works of supererogation, expressing force but not producing it, like a statue of Hercules" (p. 221). Yet near the close of this puzzling chapter we read that the function of thought is 'to lend utility to its causes' (p. 233), which here are material. "It is potential energy *producing* life and becoming an actual appearance." Again, in Chapter XI, on 'Conditions of the Ideal,' "Reason and the ideal are not active forces, nor embodiment of passion at all" (p. 265). Yet on the same page, "This suggested peace (for the conflict of impulses) . . . is the ideal which *borrow's its practical force* from the irrational impulses which it embodies" (italics mine).

It may be said that the mere appearance of a 'sense of value' in a process 'bestows utility,' simply by giving the process a limit, a *terminus ad quem*. But even so this involves some sort of reaction of this 'sense of value' upon the mechanism, otherwise why should the process not simply go on grinding out 'senses of value,' without using them as limits? It is Aristotle's problem of the unmoved mover.

This discrepancy, as it appears to the reviewer, can be charged to an oversight of the distinction between consciousness in general and reflective, cognitive consciousness. 'Consciousness,' 'thought,' 'mind,' 'reason,' are freely interchanged throughout the chapter. Recognizing that the 'sense of value' belongs to consciousness-mind, it is apparently inferred that this is *all* that belongs to it and that all dynamic efficacy must therefore be referred to material nature, of which thought is the mere 'symbol,' and which even 'can hardly lie in the same plane of reality with the thought to which it appears' (p. 219). Value is obviously a

category of conscious activity, and as immediate 'content' is perhaps not dynamic. But is it not just the business of reflection to convert this 'sense of value' into an ideal, an end? And as an ideal it surely must be regarded as dynamic in the sense of being an essential factor in a system conceived as 'dynamic.'

In its more general form this question which divides the first and the last four chapters of Volume I. is, How can the ideal be both an 'expression' and a reconstruction of instinct and habit? How can it arise out of and yet be the standard for impulse? In logic it would be the old problem of universals. Now one of Professor Santayana's theses,—indeed, one might say, the fundamental one,—is that the ideal, whether in government, religion, ethics or art, must grow out of, must be an 'expression' of, impulse. The clearness and force of his exposition of the vanity of an absolute ideal given to the impulses from without could not be surpassed. "Demands could not be misdirected, goods could not be false, if the standard by which they are to be corrected were not constructed out of them" (p. 258). Again, "Whence fetch this seminal force and creative ideal? It must evidently lie already in the matter it is to organize. Otherwise it would have no affinity to that matter, no power over it, and no ideality or value in respect to the existences whose standard and goal it is to be" (III., p. 83). The ideal, then, must be an expression of the matter, in order that it may have enough 'affinity' with it to organize it; this despite what is said above about thought not lying in the same plane with its material.

Corresponding to these two conceptions of the ideal, the one as an 'expression,' the other as control, there are two conceptions of the 'matter' to be organized. Where the controlling, organizing character of the ideal is emphasized, as in the introduction and in Volume III., impulse, instinct, immediate flux, etc., constitute the 'matter.' But where the ideal is expounded as an 'expression' of impulse, the matter appears as 'physical,' as 'body,' in opposition to consciousness and as the latter's 'cause,'—and this, too, apparently in quite an ontological Cartesian sense. Indeed, the whole treatment of the distinction of mind and body is to the reviewer as equivocal as that of reflection. Sometimes the distinction appears to be a rational construction within a process of experience which can not be described as either or merely both (*e. g.*, I., pp. 39, 234). But again, and perhaps oftener, 'matter' appears as an existential *prius*, as 'the antecedent of human life' (II., p. 200) to which somehow 'mind accrues.'

The present writer is well aware of the enormous capacity of reviewers' quotations for misrepresentation. He is also aware that there are many passages which could be cited to show that what has been described as different and discrepant conceptions of reason and its place in experience, are simply two supplementary phases of one conception, namely, that reason is *both* an 'expression' and a control, and must be the one in order to be the other. However, the reviewer can only record his impression of ambiguity in the account as it stands.

To many such captious, logic-chopping criticism as this may appear *mal apropos* in a review of a work whose style makes the reader feel much of the time as if he were following a brilliant impressionistic commentary on 'phases of human progress,' rather than a systematic treatise. But Volume I. is obviously intended as an exposition of general principles, and must, therefore, be held to the canons of systematic criticism.

Passing to the treatment of reason in society, religion and art, we find that the indigenous relation of the ideal to impulse so forcibly, if not altogether consistently, expounded in the first volume, is the nerve of the doctrine of these volumes. The history of these aspects of human progress is the story of the reciprocal creation and maintenance of impulse and reflection which constitute the process of human life. Accounts of its defeats are invariably descriptions of the failure to maintain an organic relation of these factors, of attempts to appropriate a ready-made ideal in either an absolute or an anachronous historical form.

Thus the ideal side of love does not merely 'add' a larger and more permanent value to the instinctive side, but it constitutes the salvation of the instincts. It is the method whereby any instinctive expression of love can be 'converted' in order to be saved under the new conditions which its own previous activity has created. Instinctive love, therefore, must be reformed in order to survive. This does not mean that it becomes less instinctive. It means only that the instinct shall emerge enriched in quality and extent of its content. When the need of conversion, of idealization is unrecognized, or unheeded, or when the conversion is attempted through extrinsic ideals of another race or clime, or when it becomes virtual annihilation, then all sorts of 'perversions' occur.

Obviously one of the results of immediate, instinctive love, which calls for expansive reconstruction, is the presence of offspring. The family is the ideal construction through which the reproductive impulse is expanded into interest in the protection and development of life. But just because it is thus necessarily one of the earliest organizations of impulse, 'it becomes a point of departure for many other institutions.' And 'it often assumes offices which might have been allotted to some other agency had not the family preempted them.' The annexing of these 'adventitious, parasitic functions' to the family so overloaded it that it did none of them well. With more stable occupation of land, the reverse process of unloading these functions on new institutions begins.

Here we face again the perennial problem of balance. On the one hand, the refusal to surrender old prerogatives in the face of a new world, or the attempt to conduct the new family by the rules of the old, leads inevitably to dualism and disintegration. This is a problem for experience to solve. It can not be solved in a Utopia. The statesman in his sphere and the individual in his must find as they go the best practical solution. On the other hand, this unloading upon other institutions, as the school, church, the factory, etc., may go on until the family may be emptied of almost everything but the reproductive function,—bringing up again the problem of maintaining the control and value of the latter. This, perhaps, may be effected by the reaction of these emigrated func-

tions 'in stimulating a larger social, philosophical, scientific and artistic interest.'

In view of what precedes, one is somewhat surprised at the beginning of the discussion of government to find it identified with 'what in physics is inertia, in psychology habit.' "In society it (habit) takes the form of custom, which, when codified in law and when enforced, is government. Government is the political representation of a natural equilibrium of custom, inertia; it is by no means a representative of reason" (II., p. 70). But, the reader may ask, if custom were really effective as a custom, why codify it? And what need to enforce it if it is already enforced as a habit? Codification surely is a process of reconstruction, therefore of idealization. And this is really implied in statements which immediately follow. "But like any mechanical complication it (government) may become rational. . . . Government can by its existence define the commonwealth it tends to preserve." But if it is government through codification, the 'can' should be 'must.'

This is also implied in an interesting and suggestive discussion of the various forms of government which follows. The problem is presented as just that of the best method of constructing and presenting a social ideal. The answer, as Aristotle saw, depends upon the specific conditions. "All just government pursues the general good. The choice between aristocratic and democratic forms touches only the means to that end. One arrangement may well be better fitted to one place and time than another" (II., p. 121). Where there is stratified stagnation, some form of aristocracy, theocracy, monarchy or oligarchy may be the best means to get reconstructive idealization started. However, history seems to warrant the claim of democracy that these forms of aristocracy 'have been unable to remain representative.' But the inferences which democratic theory often draws, that 'eminence is therefore not representative, and that representative character is bestowed by the mechanical expedient of universal suffrage,' do not follow.

Many stimulating things are said in the discussion of the distinction between 'political' and 'social' democracy. Political democracy is 'a symbolic extension of aristocratic privileges in the form of universal suffrage.' "It is quite compatible with complex government, great empire, and may retain, as in England, many vestiges of aristocratic institutions" (II., p. 115). Social democracy, on the other hand, 'is a general ethical ideal looking to human equality and brotherhood.' "It is the democracy of Arcadia, Switzerland and the American pioneers." Instead of measuring our prosperity by the quantity of wealth produced, as our present system of economy does, it decries this enormous production, demands less labor, a simpler and more rural life. "It would abandon the great cities to ruin, as seats of Babylonian servitude and folly, leaving the railway bridges to collapse, the tunnels to choke and the hulks of steamers to rust in the harbors." In the present high tide of commercialism such anticipations may seem fantastic. "But does any thoughtful man suppose that this commercial tendency will be eternal or that the present experiment in civilization is the last the world will see?"

(II., p. 127). If social democracy would take a more liberal form and permit the benefits of civilization to be integrated in eminent men, whose influence should direct and temper the general life, it would become a timocracy and would, in the author's opinion, 'unite the advantages of all forms of government and avoid their respective abuses' (II., pp. 128, 129).

Despite the fact that some readers are sure to renew the complaint of dualism in the character of the relation between the ideal and its material, they may possibly find the author's brilliant power of analogical analysis at its best in the volume on religion. "Another world to live in, whether we expect ever to pass wholly into it, is what we mean by having a religion" (III., p. 6). What, now, is the relation of religion to the life of reason? Let us recall that the essence of reason is the construction of an ideal. And what is the 'other world' of religion but this ideal? "Religion thus exercises a function of reason" (p. 7). What, then, are the differentiae? First, religion carries over into the ideal a part of the material of experience, while in scientific reason the ideal is conscious of its formal and hypothetical character. Further, in its attempts to carry up the material, the masses of sentiment and ideas, into the ideal, it must construct its ideal through the intuitive instead of the conceptual image. Here lies both the real strength and the historical weakness of religion. The statement of the ideal in terms of the material, i. e., in terms of instinctive and perceptual imagery, gives a richness and fullness to religious idealization impossible in science where idealization is more abstract. Indeed, 'religion has the same original relation to life that poetry has.' The only difference between poetry and religion, purged of its errors, is that 'religion deals with higher and more practical themes, with sides of life which are in greater need of some imaginative touch than are those pleasant and pompous things which ordinary poetry dwells upon.' Historically, however, 'the religious pursuit of the life of reason has been singularly abortive.' This because it has constantly confused the perceptive instinctive material which it utilizes to embody the ideal with the unidealized, that is, the actual existent material, and has accordingly often tried to usurp the work of science (II., pp. 8-13).

Here the reader wishes the volume on science were at hand. From what is here said of science, one suspects that in science, at any rate, the ideal constructions of reason are likely to be something more than mere 'additions' of value and 'celebrations' of work done by reflexes. Doubtless they are all this, but one gathers that in science, as in the passages above cited in Volume I., the ideal controls as well as 'celebrates'; that the distinction between 'efficient' and 'final' cause is likely to break down.¹

The fact that ideal construction in religion, as elsewhere, must, on the one hand, be loyal to the impulses out of which and for the sake of which it arises, and yet can only be loyal by 'remodeling' them, determines the two fundamental phases of religious experience—'piety'

¹ The volume on science has appeared since this review went to press.

and 'spirituality.' Piety is 'man's reverent attachment to the sources of his being and the steadying of his life by that attachment' (III, p. 179). "It drinks at the deep elemental sources of power and order. It studies nature, honors the past, appropriates and continues its mission." Spirituality is the creative or rather recreative function of the ideal. Piety is retrospective. Spirituality has its face toward the future, while piety dwells in the realms of established order. Spirituality pitches its tent out on the frontier, not in order to gain a worldly advantage over piety,—for 'competitive worldliness is the most deadly foe of spirituality,'—but it abides there by virtue of the demands of its free recreative work. By that same token is its habitation also on the borders of mysticism. Mysticism arises out of the element of failure in the work of recreation. It serves to tide over a period of intellectual arrest until there is recuperation sufficient for the work of reconstruction to again become articulate.

Maintenance of spirituality therefore depends upon a proper balance between impulses and ideal. Hence a too rapid differentiation, multiplication of impulses, or a too great sophistication destroys spirituality. However, some readers may experience difficulty in following Professor Santayana to the conclusion that brute life 'may be as truly spiritual as human,' and that 'the only pure mystics are the brutes.' For, while mysticism is a renunciation of discursive reflection, the latter must after all first be there to be renounced. The neo-platonist reaches the summit of his mount of transfiguration by the tortuous path of discursive intellection. As a preparation for the ecstatic vision he must first experience the impotence and vanity of reflection.

As for individual immortality, Professor Santayana regards most of the empirical evidence as 'beneath consideration.' "The palpitating mood in which it is gathered and received make gullibility and fiction play a very large part in the report; for it is not to be assumed that a man, because he speaks in the first person and addresses a learned society, has lost the primordial faculty of lying" (III, p. 230). Even at their face value these reports show only more subtle and subhuman sensibilities than ordinarily appear. They would show only that the process of dying is more complicated than is supposed, rather than point to the existence of disembodied spirits. "A disembodied life would not betray itself in specters, rumblings and spasms" (p. 234). That operations more subtle than ordinary should occur is entirely consonant with reason and experience. But 'only a hankering tenderness for superstition, a failure to appreciate the function both of religion and science, can lead to reverence for such oracular gibberish as these influences provoke' (p. 233).

The moral and metaphysical grounds of individual immortality are but little less convincing to Professor Santayana than the empirical evidence. What reason is there to suppose that more justice or that better fulfillment of ideals can take place in another life than here? If there is any continuity in content and method with this life—and without such continuity nothing remains of individual existence—life elsewhere

must involve the same reference of ideals to specific conditions and the same possibility of their lapsing and yielding to others more capable of execution (p. 248). Individual immortality is an hypostasis of 'the vision of eternity in time.' When a fact is idealized through reflection it acquires 'a status in eternity.' But 'having a status in eternity does not mean being a part of an eternal existence petrified and congealed into something real, but motionless.' It means only that 'every fact in being recognized takes its place in that ideal sphere of truth which is the common and unchanging standard for all assertions' (p. 267).

In view of what is said (p. 248) concerning the basis of the ideal in 'a dynamic world,' and more especially concerning its relevance to 'specific tendencies' and the consequent necessity of its 'lapsing and yielding to others,' some will question this conception of an ideal sphere of truth which is 'the unchanging standard for all assertions,' and wonder whether, despite the illumination which Professor Santayana turns on in his exposition of the indigenous ideal, the ghost of absolutism does not still walk in places.

Following the general plan of the entire work, between the initial chapters of definitions and principles and the closing chapters of general conclusions and applications to current problems, are a number of chapters devoted more conspicuously to historical and genetic interpretation, in which the author's unusual ability in suggestive epigrammatic generalization has large play. Many will find these the most attractive part of the volume. The reviewer would note especially the chapters on 'The Christian Epic' and 'The Christian Compromise.'

It was to be expected that Professor Santayana's volume on art would be authoritative; and in the main this expectation is not disappointed. Especially is this true of the chapters presenting the specific contents of art—'music,' 'poetry and prose,' etc.; and of the chapters on 'The Justification of Art' and 'The Criterion of Taste.'

In its largest sense, art is simple, practical reason or reasoned practise. "It is plastic instinct, conscious of its aim" (IV., p. 4). But here again we encounter the issue between the epiphenomenal and the instrumental character of consciousness; and again the outcome seems ambiguous. On the one hand, this consciousness of aim 'simply accompanies' instinct (p. 5). It is not an instrument of control. It is a mere 'expression.' "Only by virtue of a false perspective do ideas seem to govern action" (p. 6). "All invention is automatic, ideas come of themselves, dropping in their sudden form from the blue" (p. 7). "All useful things have been discovered as the Lilliputians discovered roast pig" (p. 10). On the other hand, 'art is reason propagating itself' (p. 13) and 'reason with the order in every region it imposes on life is grounded on an animal nature and has no other function than to *serve* the same' (p. 191, *italics mine*). Also we read of objects of art as 'things which would not only have *betrayed* the agent's habits, but would have *served* and expressed his intent' (p. 4). This seems to make overt action the expression of the intent, instead of the converse.

In view of the remarks already made on this issue in the discussion of Volume I., we must leave it here with these observations: (1) Of course, from the standpoint of experience regarded as a whole, all activity within it, whether viewed as conscious or unconscious, must be 'automatic,' in the sense of being self-active. From this standpoint the operation of ideas is as 'automatic' as that of the heart or lungs. But (2) this does not prevent ideas being 'instrumental' from exercising real control, any more than the automatic action of the heart and lungs destroys their interaction. One stage of activity may condition another without either becoming thereby less 'spontaneous' in its immediate activity. (3) On Professor Santayana's own most excellent showing, ideas can not quite 'drop from the blue.' They must 'express,' 'grow out of,' be 'relevant to' some instinct or set of instincts. While, in the stock instance, the forgotten name 'just comes' when it does come, yet it would not come even 'in its sudden form' were it not for the want and for the agonizing effort which precedes, fruitless as the latter may appear at the time.

But, after all, this binomial conception of the general relation of art to reason does not seriously affect the rest of the treatment. For in such a case it is always possible when danger threatens from one side to pass instinctively to the other.

Resuming then the account of art in general as activity mediated by an aim, it is evident that, contrary to much current opinion, art is not to be defined by mere correlative contrasts with industrial utility, science or morality. Nor is it to be identified with immediate esthetic valuation, which is only a prominent element in 'fine art' as distinguished from 'industrial art.' It is not a specific sort of experience, coordinate with other sorts. It is rather the concrete whole of consciously mediated life of which industry, fine art, science and morality are differentiations.

The general basis of art, then, lies in the fact that in the end an unmediated or a completely mediated activity is an impossible conception. "Activity, achievement, a passage from prospect to realization, is evidently essential to life. If all ends were already reached and no art were requisite, life could not exist at all, much less a life of reason" (p. 28).

In art in this large sense, as the art of living, there are obviously two fundamental factors: the 'material' in the form of the structural products of past activity, which are demanding opportunity for further function; and the 'ideal' which supplies this opportunity. But once more we must beware of an ideal imposed from without. "The ideal is a concomitant emanation from the natural, and has no other possible status" (p. 28).

The organic relation between these two constituent functions of activity furnishes also the basis for the distinction between 'servile' and 'liberal,' or 'fine' art. If the demand of some particular part or organ of the total structure for expression, or for maintenance, is so immediately urgent that a comprehensive organization, *i. e.*, idealization of the response, is impossible, the result is a 'servile' art in the form of the

barren automatisms of savage dance and song, or a utilitarian struggle for mere existence. Liberal, or fine art, is the result of a balanced interaction between the activity of that part of the structure calling for expression and maintenance and the idealizing activities of the response. This means that the demands for expression and maintenance are themselves more ideal, less immediate in their insistence; and, on the other hand, that the ideals are more effective because they embody more material.

From this standpoint it is evident that no impassable distinction can be drawn between 'industrial' and 'fine' art. For, "Every proximate end in being attained, satisfies the mind and manifests the intent which pursued it, while every operation upon a material, even one so volatile as sound, finds that material somewhat refractory. . . . A certain amount of technical and instrumental labor is thus involved in every work of genius, and a certain genius in every technical success" (p. 33). In so far as the distinction is to be made, it is simply one of stages in one continuous process. The industrial stage is the one 'in which untoward matter is being better prepared or impeding media are overcome.' In the liberal stage, the prepared matter 'is appropriated to ideal uses and endowed with a direct spiritual function' (p. 32).

After this identification of the essential elements of art with those of other rational functions, one is not surprised to find the volume closing with an eloquent arraignment of the modern separation of art from its industrial, moral, religious and social matrix. As usual, Professor Santayana's own words can not be improved, hence I quote freely. "The great obstacle which art finds in attempting to be rational is its function isolation." At present art 'too much resembles an opiate or a stimulant.' Our museums are 'mausoleums in which a dead art heaps up its remains.' "Art whose products are so collected and exhibited is gratuitous and sophisticated and the greater part of men's concern about it is affectation" (p. 209). "Art, like religion, needs to be absorbed in the life of reason. . . . It needs to have its processes diffused throughout all life activity, instead of being confined to abstract productions called 'works of art'" (p. 208). At present art is symbolic and vicarious and stands in contrast with reality. But if 'it were knit more closely with other rational functions, to beautify things might render them more useful, and to represent them most imaginatively might be to see them in their truth' (p. 213). Then, "No work would be called in a special sense 'a work of art,' for all works would be such intrinsically. There would need to be no division of mankind into mechanical, blind workers and half-demented poets, and no separation of useful from fine art, such as people make who have understood neither the nature nor the ultimate reward of human action. All arts would be practised together and merged in the art of life, the only one wholly useful or fine."

A. W. MOORE.

Contradiction and Reality. B. BOSANQUET. *Mind*, January, 1906, N. S., 57. Pp. 1-12.

Professor Bosanquet argues that contradiction, in its phases as bare contradiction, dissatisfaction and pain, has a place in our finite reality, and inclines to the view that we can not exclude it altogether from absolute reality. As a matter of fact, we find most experiences capable of two interpretations. Progress consists largely in a resolution of this contradiction and, furthermore, Dr. McTaggart to the contrary notwithstanding, the solution of the contradiction must leave its effects upon the real whole that results. Every real implicitly contains both the affirmation and the negation from which it has been derived. Professor Bosanquet finds in the same principle an argument for the real existence of external reality. It is true that advance in civilization is a resolution of contradictions in experience, but these resolutions do not render the contradictions illusory. The contradictions are implicit in the highest experience and serve to give it piquancy and vividness. One might even argue that the highly developed mind has a more complete realization of the external other than the lower. Persons are not sufficient alone to provide opposition in the form of 'pain, conflict, sacrifice and satisfaction.' Real things are necessary to provide for true development. In finite reality, then, contradiction is not an illusion, although it exists only to be transcended. Even in Divine Being contradiction is involved, if only as an implication of the release from the burden of the finite. Since in commonplace experience pain alone can give real depth of experience, and poetical tragedy gives the highest form of esthetic pleasure, the suggestion is made that even the absolute can not be altogether without some form of negativity, or at least of negativity transcended.

W. B. PILLSBURY.

UNIVERSITY OF MICHIGAN.

JOURNALS AND NEW BOOKS

ZEITSCHRIFT FÜR PSYCHOLOGIE UND PHYSIOLOGIE DER SINNESORGANE. October, 1905, Band 40, Heft 3. *Beiträge zur Lehre von der emotionalen Phantasie* (pp. 145-159): ROBERT SAXINGER. - The emotional background of representative ideas, just as in the case of general ideas and word-ideas, does not consist of a revival of real feelings. The feeling-tone in all these cases is due to feelings of fancy or imagination. Emotional setting of ideas due to special emotional dispositions is capable of being reinstated by various ideas indifferently. *Untersuchungen über das periphere Sehen* (160-186): STANISLAW LORIA. - This research is concerned with the question whether the accommodation of the lens in attention to peripherally situated objects, as found by W. Heinrich, is unequivocally determined by the position of the paraxial object or not and the limits within which accommodation takes place. The results are: (1) the accommodation of the eye to paraxial distances is unequivocally determined by the position of the object and is independent

of the fixation-point; (2) the eye is paraxially strongly myopic; (3) the breadth of accommodation decreases with the paraxial angle; (4) for every state of the lens an accommodation line may be drawn representing the points which are conjugate; (5) the limits of accommodation depend upon the nature of the eye. *Ueber den Wettstreit der Sehfelder und seine Bedeutung für das plastische Sehen* (pp. 187-195): W. LOHMANN. - Experiments on retinal rivalry under conditions of daily life are held to show that the parallax of objects before and behind the fixation-point resulting from the rivalry is the chief factor in the perception of solidity. *Literaturbericht*.

Alexander, H. B. *Poetry and the Individual*. New York and London: G. P. Putnam's Sons. 1906. Pp. x + 240.

Bush, Wendell T. *Avenarius and the Standpoint of Pure Experience*. Archives of Philosophy, Psychology and Scientific Methods, No. 2. Columbia University Contributions to Philosophy and Psychology, Vol. X, No. 4. New York: The Science Press. 1906. Pp. 79. 75 cents.

Höfding, Harald. *The Philosophy of Religion*. Translated by B. E. Meyer. New York and London: The Macmillan Co. 1906.

Sterrett, J. M. *The Freedom of Authority*. New York: The Macmillan Co. 1905. 8vo. Pp. vi + 319. \$2 net.

Van Vloten and Land. *Benedicti de Spinoza Ethica*. Hagæ: Comitum Nijhoff. 1905. 8vo.

Wagner, Charles. *The Gospel of Life*. London: Hodder and Stoughton. 1906. 3s. 6d.

Wallaschek, R. *Psychologie und Pathologie der Vorstellung. Beiträge zur Grundlegung der Aesthetik*. Leipzig: J. A. Barth. 1905.

Westermarck, Edward. *The Origin and Development of the Moral Ideas*. In two volumes. Vol. I. London: The Macmillan Co. 1906. 8vo. 14s.

Withers, J. W. *Euclid's Parallel Postulate: its Nature, Validity and Place in Geometrical Systems*. Chicago: The Open Court Publishing Co. 1905. Pp. vii + 192. \$1.25.

NOTES AND NEWS

THE following remarks occur in the course of a review in *Nature* of Dr. Radl's 'Geschichte der biologischen Theorien seit dem Ende des siebzehnten Jahrhunderts': "Although biology is now permeated by the evolution idea, and has continually before it the ideal of giving a genetic description of the present phase of the animate world, there is some reason to fear, as Dr. Radl indicates, a growing apathy towards the study of the evolution of the science itself. Whether it be that many workers share Nietzsche's view that the study of history paralyzes the intelligence, or that they feel it their primary business to make history,

not to read it, or that they regard historical inquiries as the philosopher's task, not theirs, it seems certain that too little attention—in our investigations, theories and teaching alike—is paid to the historical evolution of the science. A notorious example may be found in the biological work of Herbert Spencer, who, though he had almost accidentally found inspiration from a slight acquaintance with the work of von Baer, deliberately set his face against looking for more. As we lay aside the volume some general reflections remain convincingly with us—that the history of biology is a rational evolution, and at the same time inextricably intertwined with social evolution; that the same general ideas are reincarnated century after century in more evolved forms; that each generation meets the same old difficulties on a higher turn of the spiral; that clearly thought-out conceptions which seem for a time to be vanquished reassert themselves with renewed vigor, and find their position in a more complete synthesis. The modern biologist, intent on new discoveries, has no use for Aristotle, Descartes and Leibnitz, but their influence may be upon him none the less. In speaking of the aqueduct of Sylvius, the Malpighian tubules, the Graafian follicle, or the Cuvierian organs, we quaintly acknowledge our debt to the past, but perhaps we betray our indebtedness more when we are least conscious of it, for even the most modern system of biology is, like our own body, a veritable museum of relics."

VICE-CONSUL SCHLEMMER, of Mannheim, tells of the establishment of an Academic Information Bureau in Germany for the benefit of foreign students and visitors. It is located at the Berlin University, and its sphere embraces all public institutions of the empire as well as of other countries. Information will be furnished as to all the particulars necessary to be observed in entering a university or attending lectures or in regard to schools, laboratories, museums, libraries, hospitals, art galleries, etc. Dr. W. Paszkowski is at the head of the institution, and all services are furnished without charge.

PROFESSOR W. OSLER, F.R.S., has been elected a member of the Athenæum Club under the provisions of the rule which empowers the annual election by the committee of nine persons 'of distinguished eminence in science, literature, the arts, or for public services.'

PROFESSOR ERNST HAECKEL, of the University of Jena, is prevented by ill health from attending the meeting of the American Philosophical Society this month, in memory of the two hundredth anniversary of the birth of Franklin.

DR. JAMES BURT MINER, B.S. (Minnesota, '97), Ph.D. (Columbia, '03), has been appointed assistant professor of psychology at the University of Minnesota. Dr. Miner is at present assistant professor of philosophy at Iowa University. He will have charge of the new laboratory now being equipped at Minnesota and also of the work in educational psychology.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

THOUGHT REVEALED AS A FEELING PROCESS IN INTROSPECTION

WHAT is here attempted to establish is:

1. That the whole of what we are in the habit of considering as intellectual operations may be revealed in introspection as feeling process only. But to make this appear, we have to advance the theory that what in these operations are usually termed images are in ultimate analysis but specialized feelings having the characteristic of *prominence* in contrast to the characteristic of agreeableness and unagreeableness as composing emotional feelings.

2. That every intellectual operation may reveal itself in introspection as wholly consisting of *manipulations* of emotional states and *specialized* feelings.

3. That in all thought which is not directly influenced by what are usually termed sense effects, the emotional states in introspection appear as the primary factors therein, as determining the character of the process and effecting the revival and subsidence of the whole imagery phenomena.

In introspection it would seem that the greatest difficulty is experienced in *catching* the whole process in its ultimate phases, as it is in most cases interfered with by the more complex thought constructions. The intellectual operations which take place in the invention of mechanical contrivances seem to give the best results: for here the manipulation consists mainly of *concrete* images and emotional states.

The best case of this kind which occurred to the writer is given below. In this experience every phase of the process was noted at the time and conjointly with the *constructed thoughts* involved in the inventive process, so that the observing of the ultimate phases in this occurrence was no more *retrospective* than the *constructed* intellectual phenomena involved.

When a young man, there once flashed on the writer's mind a strong desire to invent a flying-machine. There then immediately

followed, without further stimulus or any previous knowledge of what had been accomplished in this direction, the following somewhat complex intellectual operation: There came first into prominence the impression of a bird in flight, with the wings most distinct, the body always remaining so blurred that at no part of the operation did the thought of a particular name for the total impression—bird—come into prominence. But a series of rapid changes of the wings was very manifest. It was as if a real bird were rapidly changing its position so that one could obtain a view of the wings from all the varying positions of the body. In fact, the whole intellectual performance was as if it were a real performance, only the changes seemed much more rapid than could have taken place in reality. There existed all through a sense of alertness and a slight sense of strain, similar to what one may have in watching an interesting operation to see how it will come out. These changes seemed to last just long enough to bring a characteristic, something of value, *i. e.*, a *presentation with an agreeable feeling accompaniment*, into prominence; and the time element in each seemed to vary in a peculiar way, *i. e.*, with the importance of the presentation for furnishing appropriate, satisfying characteristics. The subject remembers distinctly the rise of agreeable feeling when the variation in the *time* of the change was first experienced or felt.

Emotional activity was here manifest, which seemed to blend in a most peculiar way with every intellectual presentation which came into consciousness. *This blending or osculation seemed to effect the rise and subsidence of the intellectual presentations.*

The longer duration of the blending process seemed to constitute a value, a registratory value, in a later summary of all the agreeable encounters, while all the intellectual presentations met by unagreeable feeling seemed to be lost with reference to any future value. This will be made more clear when we come to the *constructive* part of the process. All through this part of the process there existed a permanent and slightly unagreeable feeling above the varying feelings continually osculating or blending with the incoming intellectual presentations, and which seemed to be the stimulus to this incoming. This seemed to be the stimulus which makes one assert, 'I want to see the *ins* and *outs* of this process.' But so far from there being any assertion here, as is sometimes considered necessary to all thinking processes, we can positively assert that there was no thought of a word as such, no presentation of a linguistic sign during the whole procedure. It was an intellectual process *recording itself*, unaccompanied by any superfluities. The whole intellectual phenomena seemed to be brought into existence by, and to be obedient to, the

varying emotional states. And when the unagreeable state gave place to a sense of easement, or more agreeable feelings, the state was such that, if it had compelled expression, the expression would have been as, 'I have made a discovery,'— and the feeling of the former uneasiness might be conveyed by the expression, 'I want to terminate this state for one of a more quiet or agreeable nature.' And yet this unagreeable, undesirable feeling seemed, from the prompt way in which the intellectual phenomena would come into prominence and join with the feelings, to be absolutely necessary for the continuance of the operation. For the cessation of unagreeable and the rise of agreeable feeling seemed to effect the subsidence of the intellectual presentations. There were other effects involved in these operations. While the wings were *displaying* themselves, there was a vague sense of the resistance and yielding of the atmosphere under the strokes of the wings. After these manipulations had continued for some time, there seemed to persist a summation of the values, *i. e.*, a complete conception of the wings' movements, their shape, the angular position in the upward and downward strokes, and the conception of the *work* that might, by these particular movements, be accomplished, seemed to come into prominence. There seemed to come out, as the work accomplished, a vague pictorial representation of a bird pushing itself up an inclined plane, which plane was continually yielding, so that the actual line of travel seemed to be more or less straight. The whole phenomena seemed to consist of these manipulations of the feelings with the intellectual presentations; and of the intellectual presentations, those only seemed to persist as having value—more permanent registration—which were embraced by or blended with the agreeable feelings; and the total resultant feeling, if the subject had at the time attempted to give it expression, might have been expressed as, 'I have picked out what was useful from this miscellaneous collection,' and, at a still more advanced stage in the summation of these feelings, as, 'I have now a complete conception of how flight is accomplished by birds.' But no articulation and no muscular movements, as such, formed any part of the phenomena we are here attempting to describe.

Another peculiarity seemed to arise, in the fact of an increase in the agreeable feeling—the rise in the subject's interest—as the peculiarities of the phenomena came into prominence, *e. g.*, the rapid inhibition of intellectual presentations which seemed to possess slight value in the summation, and the lingering, the longer duration, of those presentations which seemed to have a greater value. This seemed to be characterized by variations in emotional states. The whole feeling might be described as the satisfaction arising from the

complete discovery of the phenomena. We have said that the general feeling throughout the operation seemed more or less unagreeable, irritating, thus acting as a stimulus to further intellectual activity. This irritation being now present seemed to bring into existence representations of mechanical contrivances, but these were at first of so vague a nature that no permanent registration of them occurred; instead, the feeling of irritation, unagreeableness, was enhanced, which increased to a strain, and a momentary deadlock seemed to exist. Then in a flash the *bird's* wing was obliterated, and a bat's wing suddenly presented itself. And with the same rapidity did the feeling change; the former unagreeable strain on this point now gave place to a feeling of easement; that change of feeling which might make one exclaim, 'That's more like it; I must have been on the wrong track before.'

But there soon arose again the feeling of irritation, incompleteness, followed by the appearance of changing intellectual phenomena. First the skin covering of the bat's wing came into prominence, and almost immediately a substitution in the way of a silk fabric arose, and with this the feeling of agreeableness—easement—was distinctly discerned, and with it the cessation of any further selective movement in this particular direction. But on the rise of further irritation, *i. e.*, unagreeable, unsatisfactory feeling, there occurred a change in the presented phenomena, although no decided intellectual activities were at first very clear. There was a decided feeling of strain, a feeling of something wanting,—an emptiness seemed to persist for a moment. The subject's previous experience had given out; he possessed no definite knowledge of the anatomical structure of a bat's wing. But means were at hand whereby the desired information was soon obtained, and the mental manipulation started up again into new life, bringing first the skeleton of the bat's wing into prominence, and before this presentation had completely faded there arose, as if in a side view, the rapid presentation in various forms of the more common metals used in the arts. This stage of the operation seemed particularly interesting. It seemed as if the subject was actually passing through more or less of his whole former experience of the nature and manipulation of metals. The skeleton framework seemed never to wholly disappear during this part of the operation,—or was so readily revived as to give that impression,—so that the requirements in a substitute for an artificial wing, such as lightness, strength, elasticity, etc., seemed to impress themselves more readily by imaginary experiments continuously made on the pictured framework; and these effects seemed to have their influence on the incoming effects, as will soon be manifest.

There did not seem to be any particular order in the presentation

of the various metals, but the time they would stay in prominence seemed to have a specific relation to their prospective utility for the purpose under consideration. For instance, when a soft metal came into prominence, which it did, it was obliterated with such rapidity as to require the greatest alertness to feel sure that it had been presented. This assurance was psychically manifest as the heightening of the agreeable feeling. This process went rapidly on until steel presented itself in a variety of forms, and here there seemed to be a more hesitating movement as the feelings seemed to *warm* up to it. And a variety of modifications, such as round, square and hollow bars, came into prominence. Then various manipulations with tempered and untempered steel took place. The whole phenomena seemed like a complex operation which might have taken place in actual practise somewhat as follows: having discovered that I require a material, light, strong, elastic and durable, I set to work experimenting with the various metals, quickly discarding every metal which comes before me, with the exception of steel. Here my procedure is more careful. I temper it; I try to break it; I also try steel of various sections, and tube steel, but none as yet seems to answer my requirement exactly. Now if we substitute for what is here assumed to be accomplished physically by manipulation and what we think of as judgment, the interaction of intellectual phenomena with the characteristics of the primary feelings which we have here termed agreeable and disagreeable, we may get a fairly accurate psychical representation of the phenomena under consideration. The intellectual phenomena, so called, apart from the feelings, seem to have a *value* only in their *prominence*. And this characteristic is, as we have seen, stimulated into existence by the emotional states.

To resume. We arrived at a point where there was as yet no definite outcome as a result of the manipulations of the metals. There was again a slight hesitancy and strain; then suddenly the appearance of steel of a U section presented itself, and just as rapidly did the agreeable state seem to rise and *spread over*, as it were, the intellectual effect, bringing about a sort of agreeable quiescence, and seemingly inhibiting further activity in this particular manipulation. But this process seemed tantamount to the registration of a value in the whole. The subject remembered afterwards what seemed to him as the cause of this particular termination. He had previously been informed that steel with a U section, when properly tempered, was difficult to rupture, while being elastic; and when bent to a curved form before tempering, was difficult to turn inside out; it being, at the same time, comparatively light and strong, which is the reason for its use in the frames of

umbrellas. Now these, as we may see, are characteristics which might be useful in the mechanical construction of wings, and so required to bring about harmony in some way in this psychical process. We have mentioned that the skeleton wing seemed not wholly to disappear, or to become so easily revived as to give the appearance of continued presentation. This phenomenon still persisted, although there now commenced a further intellectual manipulation of a somewhat changed nature, seemingly in response to a still persistent feeling of unagreeableness or incompleteness. Structural arrangements began to form themselves, following out somewhat closely the presented structure of the skeleton bat's wing. For instance, plates of metal suitable for the attachment of appropriate joints—double eyes—for the long fingers presented themselves as substitutes for the wrists. To these on the one side were connected the four digits, and to the opposite side the forearm appeared as jointed, and the whole structure soon built itself up in imagination very similar to the way we might suppose a person going to work in actual practise, only much more rapidly,—with a model to guide him close at hand. As can be readily seen, having observed the structure of a bat's wing, it could be imitated mechanically with little difficulty: there arose the imaginary trial and rejection. Then again an agreeable feeling would arise with some definite presentation, this being the psychical state for completion by its seeming to effect a registration of this particular effect. Then another part would be presented and a similar process gone through. There was some slowing down of the process when the articulation at the shoulder was approached, but finally there arose certain presentations of ball-and-socket joints which were immediately succeeded by agreeable feelings, and the operation ceased.

Then from this *built-up thought* models were constructed, and as these were approaching completion their complex nature began to manifest itself. This may psychically be called the rise of unagreeable feeling on the presentation of the created intellectual complex. While nature had been fairly well followed here, the discontented feeling which sometimes arises when one has done too much was very manifest. It was becoming apparent for the first time that the complication of folding the wings was unnecessary to flight. The feeling of strain and uneasiness seemed again to persist for a brief period, when all of a sudden the appearance of an insect's wings came into prominence, and the former irritation was as suddenly changed for a feeling of agreeable quiescence. The remainder of this psychical process seemed to proceed now with less effort, and after various combinations taking place under influences similar to

those already described, there arose the appearance of a compromise between a bird's wing and an insect's wing; and with this appearance the whole activity seemed to subside and the psychical-complex, the psychosis, now regained its normal state. There seemed now no incentive to stir it further.

Models were constructed from designs conceived in these latter activities, and although thirty-five years have since elapsed the writer has never been able to improve upon these designs.

E. A. NORRIS.

ALBANY, N. Y.

MEMORY TYPES OF COLORADO PUPILS

IN connection with the work in educational psychology and child study in the Colorado State Normal School during the past year, studies have been made of the memory types and memory spans of both normal school and training school pupils, the results of which, while revealing nothing wholly new, may be valuable for purposes of comparison or as hints for further investigations. The subjects of the investigation were 100 boys and 154 girls of the training school, distributed through the grades from three to eleven, inclusive, and some 300 juniors, mostly girls, in the normal school.

I. *The Tests.* The tests were those used by Smedley,¹ with some modifications, which are apparent in the descriptions. Five sets of ten cards each were prepared, one set for each test. The cards were of dark gray cardboard, 3.5 inches wide by 18 inches long. On each card a number was printed in white digits 2.5 inches high and 2 inches wide, the numbers ranging from four digits to eight digits, and two numbers of each length constituting one set of test cards. In the arrangement of the nine significant digits to form the numbers, care was taken to avoid familiar sequences, thus minimizing the number of natural associations among the digits. The object was to discover what differences, if any, existed in the students' ability to remember combinations of digits when the stimulus was purely auditory, purely visual, or audio-visual, audio-visual-articulatory and audio-visual-articulatory-hand-motor—to use Smedley's terms.

II. *The Method.* A different set of cards was used for each test. To regulate the rate of reading the digits in the auditory test and to determine the length of exposure of the card in the other tests, a metronome beating 72 times per minute was used. One beat was allowed for each digit in the number exposed, and five seconds

¹See the Chicago report, No. 3, of the Department of Child Study and Pedagogic Investigation, 1900-1901, pp. 43-60.

elapsed between the end of the exposure and the writing of the number from memory. In the auditory test the number was read aloud distinctly and without rhythm to the beating of the metronome. In the visual test the card was exposed in easy view of the pupils for a period determined by the length of the number—five sixths of a second for each digit. In the audio-visual test the number was read aloud while the pupils were regarding it, the rate of reading and length of exposure being determined as in the first two tests. For the audio-visual-articulatory experiment the pupils read the number on the exposed card aloud and in concert. Our final test of the five differed from Smedley's in that we included in the stimulus the articulatory element which he omitted: he had his subjects write down the numbers from dictation, and later reproduce them; our subjects read the numbers from the exposed cards in concert, as in the articulatory test, and at the same time wrote them with the blunt ends of their pencils.

Since the numbers of each set of cards aggregate 60 digits, the computation of the per cent. of error was an easy matter. One error was scored for each digit misplaced, substituted, omitted or inserted.

III. *Results in the Grades.* 1. The memory span—determined as in Smedley's report (pp. 52, 53)—for auditory memory was found to be four digits for the third grade, five digits for grades four to seven, inclusive, and six digits for grades eight, nine, ten and eleven;² for visual memory the span is five digits in grade three, six in the next three grades and seven in the highest four grades. These averages seem slightly below those of the Chicago children of Smedley's test, though his computations were on the basis of age rather than grade.

2. This study gives no evidence of a special memory period. Every type of sense memory improves steadily through the ages covered by the investigation, although auditory memory has attained almost its maximum by the age of fifteen.

3. Auditory memory is distinctly inferior to every other type here studied, in every grade and at every age (eight to twenty-one). Its curve runs from 5 per cent. to 15 per cent. below the others. Smedley found auditory memory superior to visual until the age of nine.

4. There is very little difference in sense-memory of the other four types. While they all improve as we ascend the grades, their curves all lie within a zone which averages not more than five per cent. in width as platted on the familiar gridiron. The articulatory and hand-motor curves are slightly above the visual and audio-visual curves at most ages.

² The high school is organized in three grades.

5. Among the subjects of this study beyond the age of fifteen, the boys show a decided superiority to the girls in every type of memory tested. Below fifteen there is no apparent sex difference, except that girls average about 5 per cent. better than boys in audio-visual-articulatory memory throughout. In one class of 166 normal school juniors the boys graded from 3 per cent. to 9 per cent. better than the girls in every test. In another class of the same rank, numbering about 140, the boys excelled the girls in every type of memory except the articulatory and hand-motor. In both these classes, however, the proportion of boys was too small to afford a safe basis for generalization.

6. Generally speaking, the better students in each grade exhibited better ability to remember than the poorer ones, though the contrast is not nearly so marked or so constant as in Smedley's results, and there are so many individual exceptions that one is forced to question somewhat the value of the generalization. The chief superiority of the good students lies in the articulatory and the hand-motor types.

7. The most striking and decided conclusions of this study arose from a comparison of the abilities in sense memory of pupils of the same age found in different grades. Fifteen-year-old pupils were selected because they were found to be most widely distributed, ranging from the sixth to the eleventh grade. While there were but thirty-seven of these pupils, quite evenly distributed as to grades, their papers brought out a very regular but decided improvement in every form of memory, except the auditory, with school advancement. To give exact figures—auditory memory improves only 1.5 per cent. from 67.5 per cent. in the sixth grade to 69 per cent. in grade eleven; visual, from 68.5 per cent. in the sixth grade to 87 per cent. in the eleventh; audio-visual-articulatory, from 74 per cent. to 88 per cent. in the same interval; audio-visual-articulatory-hand-motor, from 69 per cent. to 95 per cent. If it were safe to generalize from such limited data, we should be forced to conclude that memory power is a matter of general mental development rather than of age, and further that articulatory and hand-motor memory are types most characteristic of the more advanced students.

IV. *Further Results from Older Subjects.* 1. For auditory memory the span of normal school juniors was found to be seven digits; for visual, eight digits.

2. The averages of a class of 166 juniors are typical of the results obtained from all the older subjects tested. They are as follows: auditory, 76.4 per cent.; visual, 84.4 per cent.; audio-visual, 90 per cent.; audio-visual-articulatory, 92.1 per cent.; audio-visual-articulatory-hand-motor, 92.9 per cent. These figures seem to indicate that for mature students that is best remembered which makes its

appeal through the greatest number of sense channels—a belief which is by no means new.

3. After all the above tests had been completed, in order to discover whether the superiority of the later-tested types of memory might be due to any extent to practise, a second auditory test was given which resulted, for the 166 juniors, in an average of 85.3 per cent.; an improvement over the first auditory test of nearly 9 per cent., but still below all other types.

4. To test the effect of repetition on memory, the last-mentioned auditory test was followed immediately by another in which the numbers were twice repeated after the first reading; this yielded an average of 92.2 per cent. A third auditory experiment was then given in which the numbers were repeated but once after the first reading; the average for this test was 90.4 per cent. The figures are self-explanatory.

WILL GRANT CHAMBERS.

COLORADO STATE NORMAL SCHOOL.

DISCUSSION

THOUGHT AND IMMEDIACY

THE point raised by Professor Bakewell in his comments on Professor Dewey's account of Immediatism¹ seems to me to be so interesting and so vital to the epistemological controversy of the day as to deserve further elucidation and discussion, even after Professor Dewey's admirable replies, with which, so far as they go, I am happy to find myself in cordial agreement.

But though Professor Dewey entirely succeeds, to my thinking, in upholding his own point of view, he does not attempt to account for the genesis of what we both consider an error, or to explain how very natural and plausible Professor Bakewell's contention is bound to appear from certain presuppositions. It seems worth while, therefore, to examine it more closely and to exhibit the underlying confusion from which it seems to arise. For so long as this confusion is allowed to persist, it is impossible to understand the plain meaning of immediatism, or to appreciate the position of Professor Dewey, against which baseless accusations of inconsistency are therefore bound to spring up.

Professor Bakewell generously disclaims, on behalf of 'the idealist' in general, what I fear can be true only of his own particular school of idealism, *viz.*, any desire to despise experience, assuring us

¹ See this JOURNAL, Vol. II., Nos. 19, 22, 25, 26.

that 'from experience he starts, to experience he ever returns,'² and infers that the issue between him and immediatism really hinges upon the interpretation of the 'treacherously ambiguous word' experience, and the character of its immediacy. So far there is no difficulty. But he goes on to betray the source of his prepossession against immediatism by indicating the ground for his intellectualist convictions. His conception of the relation of thought to perception differs profoundly from ours. Perception to him is permeated through and through with thought and dependent upon it in all its characters. The immediate experience, therefore, upon which we rest our case is and remains 'always a complex of the immediately perceived and the mediately conceived.'³ It follows, of course, that 'the facts of experience are, one and all, and from first to last, tainted with mediation,' that there is no 'sheer immediacy,'⁴ and that immediatism is an absurdity. Experience simply can not be construed without thought, and thought imports into it the whole array of 'categories' and necessitates a rationalistic account of them.

Now the whole of this attitude follows logically from its presupposition, and the latter has not been contested by Professor Dewey. He has contented himself with pointing out what is indeed a very important fact and one which rationalism habitually ignores, namely, that ultimately all reasoning processes are directly experienced and that hence there is an immediate side to all mediation, and that immediatism recognizes thought and its 'categories' as they occur and are known in experience. This Professor Bakewell admits,⁵ but it does not and can not remove his fundamental difficulty. To clear this away we must dig deeper.

We may point out, therefore, in the first place that it is *psychologically false* to treat thought as immanent in the greater part of our perceptual experience. Only such experiences are to be regarded as 'mediate' which require to be actually thought about, and are such as to set up a mediation-process (which, of course, must itself be an immediate experience, as Professor Dewey has shown). 'But if so,' I may be asked, 'do you mean to search in perception for a pure immediacy untainted by thought, for a perceptual experience which would have been what it is if no mediation had ever occurred, if no thoughts had ever entered it? Surely you can not deny that our percepts have been made by our thoughts to an unlimited extent?'

I am not, however, searching for the impossible or denying the obvious. I am pleading only for the proper psychological descrip-

² Vol. II., p. 688.

³ Vol. II., p. 688.

⁴ Vol. II., p. 690.

⁵ Vol. II., p. 690.

tion of present facts and the proper attention to tenses. To say that perceptions *have been* made by thoughts is not to prove that they *now are* thoughts, and to deny their 'mediate' character is not to deny that they have been mediated. In the light of its history the rationalist's description of immediate experience is quite intelligible. Our perceptions would not have come to be what they are if thought had never entered them, and no factor in the immediate fails to disclose the effects of mediation to a careful scrutiny. But is not all this past history totally irrelevant to the present situation and to the descriptive purpose of the psychologist? Does not the appeal to it rest on a confusion between what *is mediate* and what *has been mediated*? How is the psychical immediacy of what is now experienced impaired by the reflection that much thought has gone to its making and that it can boast of a highly intellectual ancestry? Might it not conversely have been regarded as a slur upon the purity of thought that it was predestined in the course of nature to suffer transformation into an immediate experience? The rationalist's argument, in short, is one from past history to present value, from 'origin' to 'validity,' and claims perception for 'thought,' because it once *was* thought. And in view of the strenuous opposition which rationalism offers to genetic psychology, is there not a charming flavor of inconsistency about this mode of explaining away the present facts?

If then we dismiss the rationalistic description of the immediate as psychologically unwarranted, it must be admitted that there are many experiences which are immediate and purely perceptual, and that these form a sufficient basis for immediatism. If, in addition, we realize that the 'mediations' also are immediate as actually experienced, we shall wonder further where the ground for a rationalistic interpretation of experience is to come from.

At the same time it is not difficult to foresee that the rationalist, when he realizes the situation, will instinctively flee from the hard facts of psychology to the more fluid formulas of logic. He will truly urge that a logical evaluation of our immediate experience is indispensable, and that in such an evaluation its past history can not be ignored. But he will falsely add that such evaluation will necessarily restore the supremacy of the mediate over the immediate. This assertion, however, is merely a survival of intellectualistic prejudice. There is no logical necessity about reducing perception to thought on the score of its historical antecedents. All that the historical genesis logically requires us to do is to conceive them as connected. The connection itself may be viewed the other way round. It is just as logical, and just as easy, to conceive thought as culminating in perception, as aiming at a return into the immediate

form of cognition, in short, to conceive mediation as arising and persisting for the sake of enriching the immediate. Instead of saying that perception is made by thought, why not say thought is perception in the making?

In contending that this view of the logical connection was as valid as that of the rationalist, I was, however, greatly understating my case. For really its logical value and convenience are far greater than that of its traditional rival. For the true significance and value of our rational procedures surely lie in their power to enrich and improve direct perception, and to adjust and guide our actions. It is fortunate for us that our thoughts have this power to develop gradually into immediate perceptions, to abbreviate and finally to eliminate themselves and to be absorbed in higher functions which are easier and more serviceable. Their essential function is to promote and facilitate new responses adjusted to new situations, and the quicker and more unhesitating these responses can become the more valuable they are. In this respect, however, perception excels thought. It seems absurd, therefore, to regard thought as a 'higher' process than perception merely because it is more difficult and more expensive. The perceptual and immediate form is as such preferable, and it would indeed be a fool who would prefer the protracted progress of reasoning to the rapid insight of perception, in cases where either could lead to the right decision. But as a rule our perceptions are initially inadequate. They require to be mediated and developed by painful ratiocination, and hence arises the rationalistic prejudice in favor of the 'thought' process which so often displays a superior value.

This whole antithesis, however, is a mistake, a sinister survival from the philosophy of Plato. Perception is not as such 'irrational,' nor is thought ultimately separable from perception. Instead of abusing the senses, philosophers should learn to use them. They should open their eyes to the fact that in actual knowing the mediation of the immediate and the perfecting into immediacy of the mediate form one continuous process, which rises from the lowest levels of congenital perception through the labor of reflective analysis to the unerring insight of the master mind, but exhibits in all its phases one unbroken harmony, and is controlled throughout by the purpose of sustaining and enriching life. And then, perhaps, it will at last be recognized how prescient Aristotle was in discarding Plato's false antithesis, in conceiving *νοῦς*, the highest mental faculty, as immediate, in equating it with *αἰσθησις* and in connecting rather than dis severing them by the mediation of the *λόγος*.

F. C. S. SCHILLER.

CORPUS CHRISTI COLLEGE, OXFORD.

A NOTE TO PROFESSOR ANGELL

PROFESSOR ANGELL'S appreciated discussion¹ of my paper on the 'Nature of Feeling'² seems to call for an explanation of my position, rather than for a reply to his argument; for it is evident that I have not succeeded in making clear the main points I wished to present.

I had intended to call attention to the fact already noted by other psychologists, that the word 'feeling' is used with various diverse meanings; and to show that writers of authority are wont to employ the word to express one meaning at one time, and another meaning at another time, and this without giving proper warning to their readers, and apparently without recognition of the fact that they are guilty of inconsistency.

From this I meant to argue that the word is unfitted for use in careful psychological discussions; for the reason that even if the writer employing the term explains the meaning he attaches to it, and even if he avoids all inconsistent usages, some of his readers are almost certain to attach to the word connotations of their own preference which are utterly unwarranted.

I am surprised, therefore, to find that I have left in Professor Angell's mind the impression that I agree 'that the term *can* be saved for technical service' (p. 169); for I had intended, on the contrary, to indicate that I am convinced that it is not only desirable, but perfectly possible, to eliminate the word from our psychological vocabulary, and that this may be done without finding ourselves lacking adequate and expressive words to take its place.

In this connection I may say that I should never think of speaking of 'acute anxiety' (bottom of p. 172) as feeling. I should describe it as an emotional state.

What Professor Angell speaks of as my doctrine was intended to be merely a description of what is really meant by the term 'feeling' as it is employed in careful writing by psychologists whose words we must accept as authoritative and must treat with respect.

Nothing could have surprised me more than the discovery that a psychological district attorney, whom I respect, and whose evidently friendly attitude I appreciate, should find himself called upon, in the interests of psychological morality, to institute an inquiry as to whether I was implicated in an attempted 'looting of the central storehouses of the mind in the interests of this project' (p. 173).

Of any such intention I must plead *not guilty*; and if in the opinion of Professor Angell I have been caught in the aforesaid act

¹This JOURNAL, Vol. III., No. 7.

²*Ibid.*, Vol. III., No. 2.

of psychological burglary, and with the loot in my possession, I desire at once to make full and complete reparation: and I hereby express my desire to turn over to the court (perhaps the readers of this JOURNAL will consent to act in that capacity) all such use of the word 'feeling' as I may have made in the past; giving to the philosophical public all possible assurances that I shall never again employ the word in psychological writing except where I may find it desirable to attempt to explain the meaning other writers intend to convey by its use.

HENRY RUTGERS MARSHALL.

NEW YORK CITY.

REVIEWS AND ABSTRACTS OF LITERATURE

The Freedom of Authority; Essays in Apologetics. J. MACBRIDE STERRETT.
New York: The Macmillan Co. 1905. Pp. 319.

Of the eight chapters of this book the first four are new, while the last four are reprints of former publications. In Chapter I., 'The Freedom of Authority,' the writer contends for human solidarity *vs.* abstract individualism. "Authority is the right of the species man over its individuals; and conformity is a duty of the individual" (p. 6). The individual is an organic member of his kind, he is part of a system. He is an unknown x until defined by his social relations of heredity and environment. Non-conformity has the value of the negative: it is criticism mediating a higher conformity; it both destroys and fulfills. Freedom is found in the performance of peculiar function. Man is essentially heteronomous, the law of his life has a real basis beyond his own ego. Conformity to the genus is the only way to realize the ideal generic self. The doctrine, however, transcends conventional morality: every form is imperfect and the reformer protests by the authority of the universal character which he apprehends. It also transcends morality, as such, in its advance to the persuasive authority of the divine Father.

Chapter II. reviews the attitude of Sabatier (in his 'Outlines of a Philosophy of Religion' and his 'Religions of Authority and the Religion of the Spirit'), of Harnack (in his 'The Essence of Christianity') and of the Ritschlians as a group. The position of all alike is that of 'immediacy, pectoralism, subjectivity' (p. 67). Negatively, they believe in a Christianity that is non-miraculous, non-Christocentric, non-creedal, non-ecclesiastical, non-cult, and whose Deity is non-knowable (p. 75). Their religion is based on judgments of value rather than of existence; it is rooted in the human rather than the divine. While condemning all religious authority as destructive of the spirit of religion, they yet 'accept modern thought as authoritative.'

They regard the evolution of Christianity as its degeneration and would return to its primitive form. They deny the religious value of the environment (Greek, Roman and Teutonic culture) in its influence

on the religious germ. But 'the crab-cry—back to the beginning of anything that is in a process of development—is irrational, . . . pathological and pessimistic' (pp. 82–83). In this case it means back to the simple unmediated feeling of mysticism.

Sabatier's psychology of religion can give it no rational justification. The Christian philosophy of history is the doctrine of the incarnation of the immanent Logos, the living Christ, as the spirit eternally informing the earthly church. There is neither soul without body nor body without soul, and the body has a spatial-temporal existence, a history. The test of Christianity is this: "How much reason in it, how much reality? Not how much abstract reason of the 18th or the 20th century, but how much of the absolute reason does it embody, incarnate, manifest?" (p. 101).

Chapter III. discusses Loisy's views ('L'Evangile et L'Eglise'; 'Autour d'un Petit Livre'). Like Sabatier, Loisy writes in defense of Christianity, feeling the need of harmonizing religion with modern culture. He is also a Kantian agnostic, a fideist. But as a liberal Catholic he defends religious authority, and views the history of Christianity as its progressive development.

He regards the Gospel story as largely faith's idealization of the historic Jesus, and a legitimate one. There is, he holds, no historic evidence of the miracles as facts. The historic Jesus founded no church and instituted no sacraments. But a pagan origin of many Christian rites is nothing to their discredit. In Loisy one sometimes finds 'two disconnected developments with no organic relation between them' (p. 118). There is the historical development of the church as the body of religion and the super-historical development of faith as its soul,—a dualism of fact and meaning; but each of these is social in its nature. Again, it is even a question whether his view, like Harnack's, does not assimilate to that of Feuerbach, for whom religion is the self-deification of humanity and 'the gods are wish-beings' (p. 120). For Christ is sometimes exhibited as nothing but the objectification of the community's faith. But his ultimate meaning is probably that of the immanence of the divine spirit in the church; though it is faith and not knowledge that affirms, Christ lives and is real.

Dr. Sterrett maintains that religion is not called 'to abdicate its specific work at the bidding of the scientific culture of any age' (p. 151). If her teachings involve antiquated scientific conceptions, these should be purged away; but not too quickly, for 'ecclesiasticism is ultra-conservative,' even to a fault, and its function in society is revealed by its nature. "The religious interpretation of experience given by any religion of authority, pagan or Christian, is more concretely true than that given by any agnostic form of modern culture" (p. 154). "At least . . . all interpretations of experience—scientific, ethical and religious—are on a par as to validity though not concreteness" (p. 193).

Chapter IV. discusses the historical method, which is regarded as either scientific or philosophic. The former shows the influence of positivism,

it lays too great stress on external circumstance to the neglect of inner tendency (cf. Buckle, Spencer, Taine). If the mechanical theory does not purport to be metaphysics, if it adopts positivism merely as method, if it treats its concepts of matter and force not as real entities but as economic descriptions of phenomenal experience (cf. Mach, Pearson), it has a pragmatic sanction and it comes into no conflict with the religious attitude. But it must remember its limitations. Philosophy as an attempted comprehension of the whole of experience as a system must insist on the subjective or mental factor as important; 'nothing external exists except *plus me*' (p. 174), and this *plus me* factor can not be evolved from the external world.

Mechanical evolution is invalid as an *ultimate* interpretation, for organic development implies *qualitative* change, progress and teleology. The mechanical explanation involves the infinite regress. In referring changes to the mere addition of external environments, it gets only the series *x, xy, xyz*, but discovers no ground, no sufficient reason of development. "The ground is the concrete unity of identity and difference."

The philosophical form of the historical method is teleological. "For anything to transcend its present sensuous form, there must be a factor that is *spatially and temporally unreal*, immanent within it" (p. 198). The ideal of the best is inexplicable by the mere past or present. Philosophy must rise from the relativity of the empirical view to the category of the self-related. The God-principle alone can logically banish pessimism and validate the worth of the finite. The individual who can not realize his identity with the world-principle is without ground for hope.

The remaining chapters treat of 'Ecclesiastical Impedimenta,' 'The Ethics of Creed Conformity,' 'The Ground of Certitude in Religion' and 'The Ultimate Ground of Authority.' "The historical method is the category of rationality in the humanities to-day . . . with its conception of reason expanding and developing under the stimulus of subjective needs and changing environments" (pp. 236-237). "Past forms of creed and cult are estimated by their own contemporary situations, problems and solutions" (p. 238). "The personality of the Christ is the ultimate touchstone by which we must estimate all creeds" (p. 241). They have worth so far as they reveal him who is greater than any creed. This revelation is social, organic, historic, rather than individual. Creedal conformity is thus subscription to the verdict of history. The ideal is no literal conformity to an inflexible creed which would prevent growth, but the Nicene Creed, on account of its universality and its historic vindication, deserves to be taken as an 'ultimate statement of doctrine' (p. 247).

There are two bases of certitude: authority and reason, the organic social process and the individual person. Religion is 'the reciprocal relation or communion of God and man' (p. 256); its two sides are revelation and faith, which can not be abstracted from each other. Religion passes through three psychological forms: (1) feeling, (2) knowing, (3) willing. (1) The unreasoned certitude of feeling is no measure of its

worth. (2) Here religion takes first the form of imagination, then dogma (a mixture of reason and authority), then criticism and, finally, positive synthetic comprehension. Mere negative criticism, 'thought abstracted from action and institution,' is of the devil. The real ground of criticism is faith's apprehension of a deeper truth. Many conceptions are now really problematic, and conformity to true authority will treat them as open questions and attempt their solution; *e. g.*, the nature of the Bible. The precise content of authoritative truth changes with the age. One authority may transcend another. The rationality of each is apprehended 'after the experience of having our best self educed by the process' (p. 287). Rationality implies unity with self, with society and with God. 'The real is the rational' though it contradict individual reason. Yet the actual at any time is not to be identified with the rational. Historical perspective and a social check on individual reason are demanded.

Our space permits only a brief comment on this interesting book. First, it exhibits no single standard by which religious validity may be tested. As shown above, several factors figure jointly. Are they all indeed capable of unification in the category of the absolute? and would this be a working criterion?

The writer reiterates the invalidity of the abstract use of reason. Yet the historical method to which he appeals goes far to justify the un-historical rationalism dominant from the Renaissance to the 18th century, when thought was using the best method then at its command to free European society from the outgrown authority of the middle ages. Abstract reason is able to isolate its problems and to reach a clearer definition of concepts and their relations,—needs that metaphysics must always feel. To be sure, a total neglect of content and context, analysis without synthesis, is illogical in that it forgets the bearing of its abstractions on the very *purpose* that gave them birth, and this is just what every absolutist as such is in danger of doing.

Our author is by intent equally opposed to a mere faith philosophy. The dualism of faith and reason is to be overcome in concrete knowledge in which each are factors. "Human reason to date is the organic sum total of the esthetic, ethical, religious, scientific and philosophical manifestations of the human spirit" (p. 221). The reader's query is whether the dialectic between faith and reason is put to rest in the author's attitude or whether this vibrates between a living mediated faith and an ontological absolutism which is abstract because it can not, in the nature of the case, honor the human needs which are its source.

Many passages (pp. 105, 241, 287) show the pragmatic phase of the author's thought, without which a philosophy of religion would be impossible. He appears, however, to lean both toward pragmatism and toward absolutism; and does not this mean a rejection of each in turn? In an important note in the appendix, too narrow a concept of the practical leads to a misapprehension of pragmatism; and it is condemned because it maintains that there is 'no absolute system of truth independent of the

needs of men,' i. e., because of its opposition to the abstract reason! One would fain have a system of knowledge that is instrumental in human experience *and* one that is above all vulgar (and sacred) use; but *can* one have both?

The doubt may then be expressed whether Dr. Sterrett's metaphysical assumptions are necessary and sufficient to validate science, epistemology and the other divisions of philosophy, and the arts of life, whether, indeed, they may not be found, when more closely scrutinized, to be in conflict with the genuine motives and meanings of life. One would hardly look for a clear-cut technical statement of a writer's epistemological position in a book of this purpose. But we may venture to doubt whether the ground of certitude there developed could be deemed adequate save on pragmatic assumptions; but if these are admitted, the statement of that ground would of necessity suffer some alteration.

If the book offers the technical philosopher little material and few view-points that are new, yet here much that is not new receives virile, suggestive, stimulating treatment. Its logic is robust, but to a comprehensive survey it does not always appear discriminating and convincing. The author explains, however, in his preface, that his book was 'written in a heat' and that it is both 'semi-technical' and 'semi-popular.'

E. L. NORTON.

WESTERN RESERVE UNIVERSITY.

Le Darwinisme n'est pas l'Evolutionnisme: RENÉ BERTHELOT. *Bulletin de la Société française de Philosophie*, August, 1905. (Séance of April 6, 1905.—Discussion by MM. Giard, Houssay, Lalande, Pécaut and Rauh omitted in review.)

The proposition that Darwinism and the evolution theory are not identical will be accepted as a truism by any one having even a superficial acquaintance with the literature of philosophical biology; and M. Berthelot might well have spared himself the labor of demonstrating that 'one may conceive of forms of the evolution hypothesis which discard in whole or in part the doctrine of Darwinism.'

Evolutionism and *mechanistic evolutionism* are synonymous for the author, who thereby comprehends any 'theory of the origin of species which does not introduce finality, but which explains facts by their relation to past or present facts, never to future facts.'

According to Berthelot's analysis, "Darwinism consists in the combination of four fundamental ideas: (1) the idea of the struggle for life; (2) the idea of natural selection; (3) the idea of accidental individual variation; (4) the idea of small variation, of slow and continuous change." These propositions may all be contested, he says, without compromising the evolution theory. It need not be pointed out by the reviewer that this analysis, while perhaps true of 'Darwinism' in the narrower sense in which the term is often used, does not fairly represent Darwin's own account of the origin of species.

The doctrine of Lamarck is similarly analyzed into several independent theses: " (1) The formation of new species is a consequence of

physicochemical changes produced in the *environment*; (2) there result variations acquired by the organism *during the individual life*, under the influence of external changes and *accumulated by heredity* during many generations; (3) these variations are acquired *in part consciously, in part unconsciously*—consciously in the higher animals, unconsciously in all other living beings. It follows from this that for Lamarck specific variation is collective from its origin, while for Darwin it is primarily individual. And it results that for Lamarck as well as for Darwin specific variation is not abrupt, but gradual.”

The idea of ‘accidental individual variation’ is regarded by the author as a grave defect in the Darwinian theory, and he asks whether ‘the changes which are produced in the physicochemical environment, acting at once in the same way on many individuals,’ may not ‘produce analogous modifications simultaneously among these diverse individuals.’

Many misinterpretations of ‘Darwinism’ would doubtless be avoided by a timely reference to Darwin’s own writings; and in this case it will be instructive to cite, by way of comparison, a few extracts from the ‘Origin of Species.’ After stating that at first he ‘did not appreciate how rarely single variations, whether slight or strongly marked, could be perpetuated,’ Darwin proceeds to say: “It should not . . . be overlooked that certain rather strongly marked variations, which no one would rank as mere individual differences, frequently recur owing to similar organization being similarly acted on—of which fact numerous instances could be given with our domestic productions. . . . There can also be little doubt that the tendency to vary in the same manner has often been so strong that all the individuals of the same species have been similarly modified without the aid of any form of selection. Or only a third, fifth or tenth part of the individuals may have been thus affected. . . . In cases of this kind, if the variation were of a beneficial nature, the original form would soon be supplanted by the modified form, through the survival of the fittest.”¹ Here both the agency of the *environment* in calling forth variations, and the *collective* character of these (in Berthelot’s sense) are distinctly affirmed.

To the principle of ‘*natura non facit saltum*,’ which undoubtedly dominated Darwin’s ideas of evolution, the author devotes considerable attention. The relevancy of his allusions to the work of de Vries will be readily admitted, for most biologists will probably agree that Darwin greatly underestimated the importance of discontinuous variation.

“The advances of geology,” likewise, “have disappointed the hope which the Darwinians founded on them, and seem hard to reconcile with the thesis of small continuous variations.” On the contrary, the ‘fixity and discontinuity of geological faunas and floras’ are supported by recent investigations.

The discontinuity of chemical changes is regarded as furnishing an instructive parallel, for chemical, as opposed to physical, interpretations of vital phenomena are now most in favor. “It is not improbable that

¹ ‘Origin of Species,’ 6th ed., pp. 112, 113.

what originates a new species resembles rather the synthesis of water or the explosion of a cartridge of dynamite than the progressive heating of a bar of iron." A species exists in a state of stable equilibrium, which can be thrown abruptly into a new state of equilibrium, but not altered gradually. Such metaphors are of course abundant in mutationist literature.

Darwin's bias in favor of the continuity principle is attributed by Berthelot to his historical setting, more immediately to the influence of Lyell. It was one of the fundamental scientific dogmas of his day. "This belief in universal continuity appears to have a double origin: mathematical on the one hand—or, more exactly, physico-geometrical—on the other hand, social." As regards the latter, 'the instincts and prejudices of the triumphant bourgeoisie' gave support to the theory of gradual change as opposed to abrupt or revolutionary change.

After having effected the dissociation of the principal evolution hypotheses of the day, the author proceeds to recombine certain of the elements thus obtained by a twofold act of synthesis. There result two new hypotheses which Berthelot offers under the paradoxical designations, 'Lamarckian Weissmannism' and 'Evolutionistic Cuvierism.'

As regards the first of these he says: "One may hold at the same time, on the one hand, that specific variations are abrupt and congenital; on the other, that these variations are due to changes of the environment, and in consequence that they are from their origin collective, common to many organisms placed in the same environment. For Weissmann all specific variations are congenital, but they are small, purely individual variations, which selection accumulates little by little, and the influence of the environment plays no part in their appearance."

The theories of Weissmann have undergone so many changes in the hands of their author, that one who is not primarily a biologist may perhaps be pardoned for not having followed them through all of their transformations. It is worth while to point out, however, that in his later writings Weissmann distinctly recognizes the influence of *environment* in evoking changes in the germ plasm, and the *cumulative* and *collective* character of the resulting variations. For example, he tells us that the immense number of adaptations of an organism can not be attributed to '*rare, fortuitous variations, occurring only once. The necessary variations from which transformations arise by means of selection must in all cases be exhibited over and over again by many individuals.*' These variations, we are further told, 'must be due to the direct effect of external influences on the biophors and determinants.' He even goes so far as to concede that 'climatic and other external influences are capable of producing permanent variations in a species,' independently of selection; though he remains convinced that 'the countless majority of modifications' result from selection.' "*The accumulative action of changed conditions of life,*' suggested by Darwin, is conse-

* 'Germ Plasm,' p. 432.

* *Op. cit.*, p. 415.

* *Op. cit.*, p. 422.

quently theoretically supported to a certain extent by the theory of the continuity of the germ plasm."³ It is far from the purpose of the reviewer to defend the system of Weissmann, in either its earlier or its later form, but fairness as well as historical accuracy demands this correction.

The second of Berthelot's twin hypotheses rejects 'the belief of Cuvier in providential intervention, in a creative action of the Divinity,' while preserving 'the idea that the origin of species has occurred in the greater number of cases, at least with higher species, in a sudden and collective manner, since it appears difficult otherwise to explain the paleontological facts in which Cuvier found support, and which are not less true to-day than they were eighty years ago.'

We are not told how great a modification Berthelot thinks may be fairly attributed to a single act of mutation; and we are left to wonder whether he would regard any of the larger gaps in the paleontological record as due to the non-occurrence of transitional forms, past or present. Some of the references to geology and to Cuvier would seem to imply this.

Finally, by a supreme act of synthesis, the author proposes to combine the two hypotheses just developed. By this means, 'we should obtain a view of the ensemble of biological evolution which would be neither that of Darwin nor that of Lamarck, since we should abandon the postulate of continuity, which is common to both of them, and since we should attribute the origin of new species neither to selection nor to the inheritance of acquired variations, whatever may be the influence of these two factors to call forth diverse changes, but of less amplitude, among living beings.'

To the reviewer these hypotheses of Berthelot's appear to be logical, rather than biological, creations. One looks through the paper in vain for new facts, and, indeed, for any really original interpretations. This is far from saying, however, that it is entirely lacking in interest or in suggestiveness.

FRANCIS B. SUMNER.

COLLEGE OF THE CITY OF NEW YORK.

Les mathématiques et la logique. H. POINCARÉ. *Revue de métaphysique et de morale*, November, 1905. Pp. 815-835.

Sur la relation des mathématiques à la logistique, avec une note de M. Whitehead. B. RUSSELL. *Revue de métaphysique et de morale*, November, 1905. Pp. 906-917.

M. Poincaré, discussing M. Couturat's denial of any appeal to intuition in mathematics,¹ puts the issue with French clearness. Admit that from beginning to end the deductions of mathematics are interrupted by no intuitions: what is the source and meaning of the starting-points, yes, of the whole process? Whenever a new starting-point, a new 'arbitrary convention,' is adopted, why is it preferred to others? These conventions would need an accompanying axiom asserting their existence.

¹ *Op. cit.*, p. 437.

Revue de métaphysique et de morale, 1905, *seriatim*.

This existence, of course, is not psychological nor physical, but logical; i. e., such that the conventions may be so stated that no contradictions issue from them or any of their consequences (which consequences are in mathematics infinitely numerous). Now until you have proved the validity of complete induction, you can not argue with respect to an infinite series. But to prove complete induction you must show that none of an infinity of cases would offer in itself a contradiction. This you can not do without complete induction as a basis. Thus mathematics has no means of proving the logical existence of its concepts, except by an appeal to the intuition. Again, what guarantee have we that our definitions apply to the entity defined, *e. g.*, that the definition of number applies to those entities we call numbers? Surely it needs an intuition to perceive the identity of the two. Again, the definitions of pasigraphy do but give over again what we intuit directly, *e. g.*, the definition of one as the class of two members which are identical—for what is *two* unless we first know *one*?

Mr. Russell's indemonstrable axioms, not being shown by him to be incapable of self-contradiction, are again intuitions. M. Couturat indeed admits that we need a special axiom in each case to assert their existence. This amounts to admitting that we intuit them. We think M. Poincaré might say that even the deductions themselves have force to us because we intuitively perceive their value. Who can prove that proof is binding? Is it not an immediately felt certainty? In short, as, if I remember correctly, Professor Royce once remarked, intuition there is in plenty in mathematics, but the real issue is, is it the *kind* of intuition we have in space-perception and daily experience with the outer world? We do not see that M. Poincaré has here raised a point which Mr. Russell need deny. What the former calls an intuition the latter calls an indemonstrable proposition. But so long as M. Poincaré and (as quoted in the paper named above) M. Boutroux define intuition in a purely logical sense, not in an experiential sense, we do not see that there is an important difference between the two schools, and we must class both over against the school of radical empiricism which believes that existence, concept, truth, proposition, can be defined in psychological or physical terms. This question, we regret to say, the devotees of logistic do not explicitly examine. It is a fault common to the whole school, that they start from certain philosophic presuppositions which admit of much controversy, and then think that their methods and results must have fundamental philosophic value. The same criticism, we think, pertains to Mr. Russell's reply to M. P. Boutroux. Mr. Russell shows that correspondence is not an ultimate indefinable, that there is no gap in the reasoning which leads to it, needing to be filled by an appeal to intuition. And yet M. Boutroux, who defines intuition as 'not the result of sense-experience, nor of combination of or deduction from anterior knowledge' could reply, we think, in the spirit of M. Poincaré, that it is a guiding force which leads us to combine or deduce from anterior knowledge, or even to set up new indefinables. We agree with Mr. Russell in finding

¹ *Revue de métaphysique et de morale*, XIII., p. 624.

this definition hard to understand, for we do not see that there is anything in it which could not be expressed in logistic terms. Indeed, Mr. Russell admits that if by intuition you mean the discovery of a new indefinable, you are consistent enough. M. Boutroux also accuses Mr. Russell of not getting all the detailed results of mathematics. The latter replies (justly, we think) that when you have defined a class like number intensionally, you have essentially deduced all the particular numbers: the general rule being given, that is enough. He accuses M. Boutroux in turn of confusing intension with extension. If the extension is not completely deduced, the intension may be: the latter alone is the subject-matter of mathematics. Again, M. Boutroux is said to confuse the act of discovery with the thing discovered. The thing discovered may be an object of intuition even while it is discovered by means of logistic processes. Of course; but is intuition after all essentially different from logistic proof? It seems unimportant, how we are led to discover a truth; the important question is, do the truths discovered, when reduced to lowest terms, show mutual independence, or are they logically dependent upon a small number of concepts and axioms? It is this connectedness or disconnectedness that we want to discover, and if logistic has shown that the complex 'subject-matter of exact thought' stands upon a very few simple truths, it has done a great thing. The real problems for discussion are, we think, not the issue between logical intuition and logical deduction, but the philosophical presuppositions of logistic, and the correctness of the definitions and deductions it contains.

W. H. SHELDON.

PRINCETON UNIVERSITY.

JOURNALS AND NEW BOOKS

ZEITSCHRIFT FÜR PSYCHOLOGIE UND PHYSIOLOGIE DER SINNESORGANE. November, 1905, Bd. 40, Heft 4. *Ueber das Verstehen von Worten und Sätzen* (pp. 225-251): CLIFTON O. TAYLOR. - By observing the introspection of a number of subjects in the comprehension of various texts and in the solution of problems, the following conclusions are reached: The comprehension of sentences of concrete content may be aided by the development of congruent imagery. These auxiliary images become less frequent as the matters treated of in the text are more familiar. The comprehension of sentences of abstract content is not facilitated by such imagery, but rather hindered. Pauses not occupied by special experiences appear necessary to comprehension. The influence of context may aid in comprehension without the appearance in consciousness of any special contextual experience. *Die Orientierung der Brieftauben* (pp. 252-279): G. H. SCHNEIDER. - The problem to which this study was limited was whether the carrier-pigeon possesses an innate sense of direction, or whether it is guided by the eye, and in this case what factors in topography and the like are significant. The

method was to release pigeons of varying ages at different distances, and under varying topographic conditions, and to note the time and nature of the flight homeward. The conclusion is that there is no innate sense of direction. Young pigeons find their way home even at short distances with great difficulty, and often require days to return, and in many cases they never do return. Groups of houses and valleys seem to be the chief guides. The nature of the flight varies widely. If the home environment is clearly seen, the flight is in a straight line. When the home environment can not be seen, and the direction is unknown, the pigeon flies about for some time in a circle. When two villages similar in appearance to the home environment are seen, the flight alternates for a long time back and forth. This study was made by Dr. Schneider in 1886 at the suggestion of the Prussian Ministry of War. *Literaturbericht*.

REVISTA FILOSOFICA. November-December, 1905. *La Finalità della vita* (pp. 589-621): B. VARISCO. - A defense of final causes in biology and a criticism of Reinke's 'Philosophie der Botanik.' In opposition to Reinke, Varisco holds that a living organism has something—life—not found in inorganic nature. In physiology neither causality nor finality can be ignored. To overlook finality is to overlook the organism. Indeed, in the case of organisms finality is much more evident and certain than causality. *La Sociologia e l'insegnamento Secondario e superiore* (pp. 622-648): A. PAGANO. - The majority of those Italians who guide the political affairs of their country receive their education under one of the faculties of law in an Italian university. Their previous education has been chiefly literary, their university training is chiefly 'legal.' In both they are provided with traditional conceptions for deductive application to present conditions which the student has not been properly fitted to understand. Literary training should not be diminished, but it should be so selected and combined with the study of history broadly conceived, that the student becomes acquainted with the geneses and tendencies of the social forces with which the lawmaker has to reckon. *Sul Nietzsche* (pp. 649-668): A. FRANZONI. - A review of recent works on Nietzsche. *Rassegna Bibliografica* (pp. 669-717). *Necrologio*: Romualdo Bobba; Vincenzo Lilla.

Arréat, Lucien. *Art et psychologie individuelle*. Paris: Felix Alcan. 1906. Pp. vii + 158. 2.50 fr.

Binet, Alfred. *L'âme et le corps*. Paris: Ernest Flammarion. 1905. Pp. 288.

Boulanger and Hermant. *Association des idées chez les idiots et les imbeciles*. Ghent. 1906. Pp. 138.

Cassirer, Ernst. *Das Erkenntnisproblem in der Philosophie und Wissenschaft der neueren Zeit*. Erster Band. Berlin: Bruno Cassirer. 1906. Pp. viii + 608.

Edmunds, W. *Sound and Rhythm, and Box of Models of the Human Ear*. London: Baillière, Tindall and Cox. 1906. Pp. xii + 96. 2s. 6d.

- Gramier, Camille. *La femme criminelle*. Paris: Octave Doin. 1906. Pp. 468.
- Grasset. *Le psychisme inférieur*. Paris: Chevalier and Rivière. 1906. Pp. 516. 9 fr.
- Haeckel, Ernst. *Darwinism and the Problems of Life*. Translated by Joseph McCabe. London: A. N. Owen and Co. 1906. 6s.
- Hoffman, Abraham. *René Descartes*. Stuttgart: Fromann. 1905. Pp. x + 194. 2 M.
- Hyslop, James H. *Enigmas of Psychical Research*. Boston: Herbert B. Turner and Co. 1906. Pp. x + 427.
- Loeb, Jacques. *Dynamics of Living Matter*. New York: The Macmillan Co. 1906. \$3 net.

NOTES AND NEWS

A. H. BUCHERER, writing from the University of Bonn to the *Athenæum* (of March 24), makes the following observations in the course of his rather technical communication. "It is the fate of all important physical theories that, after inaugurating a period of brilliant discoveries, they are taken to task by an array of new experimental facts, accruing from the continually refining process of our methods of observation. The Maxwellian theory has not been exempt from this fate. It is the absence of the effects of the annual motion of the earth through the ether on terrestrial optics, and in general on terrestrial electromagnetic phenomena, that causes so much difficulty, and it is to-day the foremost aim of all theorists working in the field of electromagnetism to find a plausible hypothesis accounting for this absence, which has been established to an astounding degree of accuracy. To speak strictly, the Maxwellian theory in its original form can not offer any explanation, and we have to turn to its natural outgrowth, the electronic theory. It can be shown that, unless the structure of matter undergoes a certain change by moving through the ether, the negative results of all the experiments undertaken with the view of discovering the influence mentioned would be incomprehensible. Now, whenever we appeal to the structure of matter for an explanation of electromagnetic phenomena, we really appeal to the electrons of which we consider matter to consist. . . . An electron at rest is a small charged sphere of a diameter of about one-ten-billionth part of a centimeter, the electric charge residing on the surface or being distributed in the interior. The electric force of this electron is easily expressed by applying the ordinary laws of electrostatics. If we impart a uniform motion to the electron we must assume the laws of flowing electricity. For the motion of a charge constitutes an electric current, and to start this with its magnetic field a certain expenditure of energy is required. We can view this electromagnetic energy in the light of the ordinary kinetic energy of masses, and ascribe it to some ideal mass of the electron, which is then termed its electromagnetic mass. There is this

difference, however, that if compared with the masses we are familiar with in mechanics, it varies with the velocity, becoming infinite when the velocity of light is reached. This difference may, nevertheless, be only apparent, since we have no experience with ordinary masses moving with velocities sufficiently great to exhibit their dependence on velocity. And there is yet another distinction. If we accelerate a moving electron in its line of motion, its mass behaves differently from that which is called into play when we impart to it an acceleration perpendicular to the direction of its velocity. So we are forced to distinguish between a longitudinal and a transverse mass, besides the mass mentioned above in connection with the kinetic energy of the electron. For slow motion these three masses assume identical values. The manner in which these masses increase with velocity depends on the shape of the electron. . . . He (Kauffman) established beyond any doubt *that the Lorentz electron described above does not satisfy the experimental data*. The Lorentz deformation being claimed to be the only one to account for the absence of any influence of the earth's motion on terrestrial optics, it would appear that the Maxwellian theory, which forms the basis of Lorentz's analysis, stands condemned. The writer does not quite share this opinion. Matter is not so simply constituted that we should venture to make absolutely final statements as to the effects of a rectilinear motion upon its structure; nor is the Maxwellian theory so inelastic as to break down at once under the weight of these brilliant experiments of Kauffmann."

It is a pleasure to note the appearance of the *Journal of Abnormal Psychology*, of which the first number has been issued. It is to be published bi-monthly from April 1, 1906, and the editorial management will be under the direction of Dr. Morton Prince with the cooperation of Professor Hugo Münsterberg, Dr. Boris Sidis, Dr. Charles L. Dana, Dr. J. Putnam, Dr. August Hoch and Dr. Adolf Meyer. The prospectus makes the following statement: "The *Journal* is meant to subserve the interests of both medical science and psychology. It is primarily intended for the publication of articles embodying clinical and laboratory researches in abnormal mental phenomena. At present reports of observations in this field are scattered throughout the medical and psychological literature of the world, and not only escape attention, but it is difficult to find them when wanted. Until now there has been no such periodical printed in English. It is intended that the *Journal*, though printed in English, shall be international in character. Articles may be printed in French or German if expressly requested by the author." The first number contains articles by Dr. Pierre Janet, Professor W. von Bechterew, of St. Petersburg, Dr. James J. Putnam and Dr. Morton Prince. Editorial communications should be addressed to Dr. Morton Prince, 458 Beacon St., Boston, and subscriptions (three dollars a year) and all business correspondence should be sent to the Old Corner Bookstore, 27 Bromfield St., Boston, Mass. The publishers deserve decided credit for the material qualities of the *Journal* and its general appearance.

THE *Harvard University Gazette* announces the appointment of Professor Eugen Kühnemann, of Bonn University, as Germany's representative at Harvard for 1906-7, the second year of the international interchange now regularly established between Harvard University and the German government. Harvard's representative for next year has not yet been announced. During the current year Germany was represented at Harvard by Professor Wilhelm Ostwald, of Leipzig; and Professor Francis G. Peabody was Harvard's representative at the University of Berlin. Both of these professors went into residence as members of the teaching staff for one semester, giving a stated number of exercises every week. The success of the first year's experiment as shown by the regular attendance of students and their sustained interest is a favorable indication of the benefits to be derived from the interchange in the future. The interchange is carried on under an academic protocol or treaty between Harvard University on the one hand and the German government on the other, which is to continue in force until withdrawn by mutual consent. Professor Kühnemann's courses at Harvard University next winter will probably deal chiefly with the classic epoch of German literature in the eighteenth century and with German literature and thought of the present day.

THE *Psychological Bulletin* reports that "a special alcove has been set aside in the philosophical library of the Johns Hopkins University, to be called the Royce Collection of Philosophical Americana. The alcove is endowed by a fund donated by Professor Josiah Royce, of Harvard University. It will comprise especially works, editions, manuscripts, etc., illustrating the sources and progress of philosophy in America."

THE Western Philosophical Association met conjointly with the North-Central Section of the American Psychological Association, on Friday, April 13, at the University of Wisconsin. Abstracts of the papers read will be published in a later number of the JOURNAL.

DR. E. C. MOORE, professor of education at the University of California, has been appointed dean of the coming session of the University of California Summer School. After the summer session Dr. Moore will go to Los Angeles to assume the duties of superintendent of schools of that city.

PROFESSOR ROBERT FLINT has received the appointment of Gifford lecturer at Edinburgh for two years, and Professor James Wood has been appointed Gifford lecturer for three years at St. Andrews.

DR. HANS DREISCH, of Heidelberg, has been appointed Gifford lecturer in Aberdeen University for 1907-9.

DR. GUSTAVE LE BON has been elected foreign associate of the Académie Royale, of Belgium.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

REALITY AS EXPERIENCE

THERE are those who find that the assimilation to each other of the ideas of experience and reality is seriously hampered or even put out of court by the fact that science makes known a chronological period in which the world managed to lead a respectable existence in spite of not including conscious organisms. Under such conditions there was no experience, yet there was reality. Must we not, then, either give up the identification of the two conceptions, or else admit we are denying and sophisticating the plain facts of knowledge?

One is entitled to enter a *caveat* against any attempt to impose science, whether physical or psychological, as philosophy. One is moved to suggest that the greater the accumulation of interesting and professedly important details, the more urgent the question of what the import and interest are: the philosophic meaning of it all. Yet most empiricists would hardly be willing to adopt any philosophic position of which it could be clearly shown that it depends upon ignoring, denying or perverting scientific results.

Let us, then, analyze the situation which is offered to justify such charges. *It is a situation of which, by scientific warrant, it always is to be said that it is on its way to the present situation, that is, to 'experience,' and that this way is its own way.* The conditions which antecede experience are, in other words, already *in transition* towards the state of affairs in which they are experienced. Suppose one keep in mind the fact of *qualitative-transformation-towards*, and keep in mind that *this* fact has the same objective warrant as any other assigned trait (mechanical and chemical characteristics and relations, etc.). What, then, becomes of the force of the objection?

If, at some point, one shoves a soul-substance, a mind or even a consciousness¹ in between the prior condition of reality and experience, then, of course, the suggested implication—of identification of

¹Consciousness is "the faint rumor left behind by the disappearing 'soul' upon the air of philosophy," James, this JOURNAL, Vol. I., p. 477.

reality and experience—does not hold. Reality and experience are separable, because this heterogeneous factor interposes and *makes* their difference. *It*, not reality, is responsible for the transformation; *it* somehow modifies reality and makes experience out of it, the resultant experience being heterogeneous to reality in the degree in which the intervening mind, subject, or substance, is interjective in its nature, and sudden or catastrophic in its workings. I am not concerned here with all the hopeless puzzles that now emerge—puzzles which constitute ‘metaphysics’ in the popular, pejorative sense of that word. I am not even concerned with pointing out the difficulty, with respect to an experience so constituted, of picking out the features which belong to reality pure and uncontaminated, and those for which mind or consciousness, or whatever, is held accountable. I am only pointing out that such a conception is incompatible with the idea that the earlier chronological condition of reality is for philosophic purposes henceforth identifiable with reality. For philosophy, reality, on this basis, must include ‘mind,’ ‘consciousness,’ or whatever, along with the scientifically warranted early-dated world; and philosophy must worry through, as best it may, with the questions of a reality so hopelessly divided, by conception and definition, within and against itself. It is in any case a notion irrelevant to the particular problem under discussion.

I return to the supposedly strictly scientific objection. Unless some heterogeneous kind of reality is shoved in, then the early reality is at any and every point on its way to experience. It is only the earlier portion, historically speaking, of what later is experience. So viewed, the question of reality *versus* experience turns out to be only the question of an earlier version of reality against a later version,—or if the term ‘version’ be objected to, then, of an earlier rendering or expression or state of reality compared with its own later condition.

We can not, however, say an earlier reality *versus* a later reality, because this denies the salient point of *transition towards*. Continual-transformation-in-the-direction-of—this is the fact which excludes on the basis of science (to which we have agreed to appeal) any chopping off of the non-contemporaneously² experienced earlier

²I insert this word because it is essential. By hypothesis, this prior state now *is* experienced, namely, in science, or so far as experience becomes critical. This is the scientific fact on which are wrecked all strictly objectivistic realisms. It is also the fact which, on the basis of a *psychological* analysis of reality and the substitution of psychological science for physical science as a methodological clue, is perverted into idealisms. Of course, it may be pointed out that this psychological procedure always starts from the body and its organs, the senses, brain, muscles, etc.; so that, as Santayana says, idealisms

reality from later experience. So viewed, the question for philosophy reduces itself to this: What is the better index, for philosophy, of reality: its earlier or its later form?

The question answers itself: the property or quality of transition-towards, change-in-the-direction-of, which is, to say the least, as objectively real as anything else, *can not* be included in the statement of reality qua earlier, but is only apprehended or realized *in* experience. In a very real sense, the present experience of the veriest-unenlightened ditch-digger does philosophic justice to the earlier reality in a way which the scientific statement does not and can not: can not, that is, as formulated knowledge. As itself vital or direct experience, as *man's* experience (which as geologist's or physicist's or astronomer's formulation is ignored), the latter is more valuable; and is truer in the sense of worth more for other interpretations, for the construction of other objects and the basing of projects upon them. The reason the scientist can suppress in his *statement* of the reality factors which the reality possesses, is just because (1) he is not interested in the total reality, but in such phases of it as serve as trustworthy indications of imports and projects, and because (2) the elements suppressed are not totally suppressed, but are right there in his *experience*: in its extra-scientific features. In other words, the *scientist* can ignore some part of the *man's* experience just because that part is so irremediably there in experience.

Suppose a theoretically adequate cognition of the early reality as early (prior to the existence of conscious beings) is attained: call this *O*. Call its properties *a, b, c, d*, etc. Call its laws, the constant relations of these elements, *A, B, C, D*, etc. Now since, by the evolutionary theory to which appeal is made, this *O* is in qualitative transformation towards experience, *O* is not reality complete, is not *R*, but is a selection of certain conditions of *R*. But, it may be replied, the theory of *evolution* does recognize and state these factors of transformation. So be it. But where is the *locus* of this recognition? If these factors are referred to *O*, to the prior object, we

hold that because we get our experience through a body, therefore we have no body. But, on the other hand, it may be pointed out that this body, the organism and the behaviors characteristic of it, is just as real as anything else, and hence that an account of reality based upon systematically ignoring its curious attitudes and responses (that is, a philosophy based preferentially upon physical sciences) is also self-contradictory. In such a situation, the important point would seem to be the significance of science or experience in its critically controlled forms, whether physically or psychologically directed. And here is where the pragmatic variety of empiricism with its interpretation of the place of reflective knowledge, or thought, in control of experience, seems to have the call.

have the same situation over again. We just have certain additional properties, *e*, *f*, *g*, etc., with additional functions, *E*, *F*, *G*, etc., which as referred to *O* are still in qualitative transformation. Something essential to reality is still omitted.

Recognize that this transformation is realized in present experience, and the contradiction vanishes. Since the qualitative transformation was towards experience, where else *should* its nature be realized save in experience—and in the very experience in which *O*, the knowledge object, is present.

The *O* as scientifically known is thus contained in an experience which is not exhausted in its quality of presenting *O* as object. And the surplusage is not irrelevant, but supplies precisely the factors of reality which are suppressed in the *O* taken as the chronologically prior thing. The only reason this is not universally recognized is just because it is inevitable and universally so. Only in philosophy does it require recognition; elsewhere it is taken for granted. The very motive and basis for formulating *R* as *O* is in those features of the experience which are not formulated, and which can be formulated only in a subsequent experience. What is omitted from reality in the *O* is always restored in the experience in which *O* is present. The *O* is thus really taken as what it is—a condition of reality as experience.

This immersion of a knowledge-object in an inclusive, vital, direct experience (which terms, like 'immediate,' are tautological, serving only as warnings against taking experience partially or abstractly) is the solution, I take it, of the problem of the transcendent aspect of knowledge. What is said of the overreaching, diaphanous character of knowledge in relation to its object is something which holds of the experience in which knowledge-and-its-object is sustained, and whose schematized, or structural, portion it is. Every experience thus holds in suspense within itself knowledge with its entire object-world, however big or little. And the experience here referred to is *any* experience in which cognition enters. It is not some ideal, or absolute, or exhaustive experience.

Thus, the knowledge-object always carries along, contemporaneously with itself, an other, something to which it is relevant and accountable, and whose union with it affords the condition of its testing, its correction and verification. This union is intimate and complete. The distinction in experience between the knowledge portion, as such, and its own experienced context, as non-cognitive, is a reflective, analytic distinction—itsself real in its experienced content and function. In other words, we can not dispose of the 'margin' or 'surplus' of the experience in which knowledge is im-

mersed as being emotional and volitional (and therefore just psychological, and hence philosophically irrelevant) because the distinction between knowledge-in-relation-to-its-object, qua known, and other, supposedly irrelevant, features is constituted in one and the same subsequent reflective experience. The experience in which *O* is presented is one in which *O* is distinguished from other elements of the experience as well as held in vital connection with them; but it is not one in which the knowledge-function is discriminated from other functions, say, the emotional and volitional. If the later experience in which this discrimination is made is purely psychological, then the knowledge-function itself, as well as the emotional and volitional, is merely a psychological distinction, and again the whole case falls. In other words, whether taken directly as the scientist's experience or later as the philosopher's (or logician's) experience, we have the same type of situation: that of something discriminated as a condition of experience over against and along with those features of experience of which it is the condition.

If one is inclined to deny this, let him ask himself how it is possible to correct (supposed) knowledge of the earlier history of the globe. If *O* is not all the time in most real connection with the extra-scientific features of its experience, then is it isolated and final. If, however, it has to square itself up with them, if it enters as just one factor into a more inclusive present reality, then there are conditions present which make for accountability, testing and revision. To take *O* as an *adequate* statement of reality (adequate, that is, for philosophy) is to exalt one scientific product at the expense of the entire scientific procedure by which that product is itself legitimated and corrected.

JOHN DEWEY.

COLUMBIA UNIVERSITY.

THE GROUND OF THE VALIDITY OF KNOWLEDGE¹

II. IMPLICATION AND THE MEANING OF 'IN EXPERIENCE'

THE origin of the demand for a transcendent has been presented in some detail in the preceding article of this series. There it was found that to guarantee the success of inferences of the alogical kind neither merely correct data in the sense of 'correspondence' nor the formal correctness of the inference process itself is sufficient. For the success of inference as a means of readjustment

¹This is the second of a series of four articles dealing with this subject. The first appeared in this JOURNAL, Vol. III., No. 8.

there is demanded as external to it, and therefore as in some respect independent, a regularity and uniformity, persistent and permanent; and since this 'order' is not to be found in the series of conscious events, that is, in the *immanent*, a *transcendent*, which shall be identical with or 'bearer' of this permanent regularity, etc., is in turn demanded.²

In the first place, and perhaps side by side with other ways of regarding it, this demand for a transcendent can be *formulated* as an *implication*. Put in a propositional form, which may be not undeserving of criticism, it may be stated that if alogical knowledge is to be true, i. e., successful, there must be a transcendent as agent, etc. Yet it must be emphasized that, although the implication can be stated in this way, it does not follow that it is itself one as between propositions. Rather the implication itself is of that which is the very condition of the success of alogical inference and knowledge put in propositional form; consequently its nature and 'root' may be of a kind widely different from that of the logical implication holding good of propositions and of classes. It may be an implication by a proposition of something which is not a proposition. To consider this matter in detail is, accordingly, my present purpose.

Now there are two ways in which, perhaps, not only both the demand for a transcendent and the response to this will each be looked upon, but also according to which it may be legitimate to regard each. Firstly, and admitting the demand to be one of implication, it may be held by some that this is to be *met* by *assuming* or *postulating* the transcendent; or, secondly, by others it may be considered that it is wholly a matter of implication with which we are dealing; that for the success of the inference an 'external' order is *implied*, and that this order *implies* a transcendent. But as an addendum to this second position it may be insisted upon by some that the bare implication is sufficient and that the *existence* of the transcendent can not be proved and is, in fact, indifferent, since we can and do make successful predictions without settling that point.

In order now to have a basis, as well for the possible criticism of a position like the last as also for the solution of our general problem, it is evident that the nature and structure of implication in general must be examined. With that done it may result that there are two species of this genus, both having to do with the 'coming true' of an inference-prediction or of alogical knowledge, but yet concerned in different ways with the success of such an instrumental-

² That in general this is the case may be both a well-known and a frequently accepted position. Compare, for example, Venn, 'Principles of Empirical Logic,' in various places.

adaptive and furthering-of-life means of readjustment. The two species may be traced back to different 'roots,' and in turn these roots found to supply different proximate needs, and although going to a common soil, drawing from this, however, a different sustenance.

To proceed to this examination, then, I begin with logical implication, because of the advantage offered by its greater familiarity. By logical implication I mean that which *includes* or is identical with the two kinds sometimes designated as *formal* and *material* respectively.⁸ The material implication is simply a particular case of the formal. It is that relation in virtue of which it is possible, for example, to infer validly one *proposition* from one or more others or, in the case of a series, each member follows from the preceding according to a law. It holds without reference to that *truth* (or falsity) which consists in 'correspondence with an object' or in success. Logical implication, then, concerns the formal correctness of an inference-process consisting of 'material' propositions. If it be regarded as something, the discovery of which may serve as a means for the satisfaction of some need, say that of the readjustment of an experience at present characterized by conflict, then that need is in general one for *consistency*, although, as has been developed in my first article, this may in turn serve as a means for the satisfaction of an *ultimate alogical need* or end. But the readjustment would consist, first, in the removal of conflict and so in the conforming of the readjusted experience to the ideal of consistency or of rigorous logical implication.

We may now pass to the matter of the nature and structure of implication in general; in the attempt to state this, logical implication, as a possible species, will be of help. The characteristics of the genus, and therefore the 'conferentia' of the species, may be said to make up the following *generic structure*, difficult though it be to state this satisfactorily, and necessary as it is to put it in propositional form: That if it be asserted that *p* implies *q*, then (1) *that which is implied is both 'other than' and 'beyond' the implier and yet in some way 'in' the implier*; (2) *that 'this way' is characterized by the 'beyond' and the 'in' constituting, as it were, two points in a relation, which* (3) *relation is accordingly absolutely determinate and unequivocal, binary and asymmetrical*. Although it is necessary under the circumstances to state this generic structure in propositional form, and although likewise, if species of implication are found, the statement of these must be propositional, never-

⁸ Compare, for example, Russell, 'The Principles of Mathematics,' in various places, especially Chapters II. and III. Also Couturat, 'L'Algebre de la logique,' Scientia Series.

theless the reference in the meaning of some of these statements, as they transcend themselves, may be to something not propositional or dependent on propositions, and yet implicative in nature.

With the logical as one possible species of implication, is it possible now to find another? In the logical the above generic structure must, of course, be present, but it is present as holding good between propositions and, perhaps, classes. Present and observed, or, let us say, with that which is implied made explicit, it constitutes the formal correctness of an inference procedure. Yet essential as such formal correctness may be, it does not constitute the sufficient condition for the success of alogical knowledge. For this a transcendent agent is implied as external to the inference, as something not propositional in nature and as in some respect independent, since the inference may cease to exist as a natural and temporal event, but the agent for its success *must* continue to exist, must persist. Now, since truth in the sense of this formal consistency may be possible without this transcendent ground, but *success*, even with formal consistency present, impossible without it, it may be said that if the demand for a transcendent be formulated as an implication, it is that which when traced to its roots is found to originate from a source having to do with the satisfaction of a need quite distinct from that for formal consistency, namely, the need for success in the termination of the process of readjusting subjective experience to something environmental. Accordingly, I conclude that there is another species of implication, coordinate with the logical, but, as springing from a different need, having its own differentia. This kind of implication, in agreement with the terminology of the previous paper and from its 'root,' may be called *alogical* or *biological*. Furthermore, the justification, first, of calling the demand for a transcendent an implication appears from its agreement with logical implication in respect to generic characteristics; in both something 'other than' and 'beyond' and yet in some way 'in' the judgments of an inference as implier is *necessitated*. Secondly, the justification of recognizing two species appears, for in logical implication this 'something,' which is both 'in' and 'beyond' that which implies it, is like in kind; both implier and implied are propositional. On the other hand, in 'biological' implication this 'something' 'other than' and 'beyond' the inference for whose success it is necessitated, even as independent, is unlike in kind to its implier; it is in some respect 'wholly external' to anything inferential or propositional in character and contrasts with this in its unexceptional uniformity and persistence. The inference transcends itself, pointing to an 'other' external to its own internal logical implication; yet the im-

plicative relation here as elsewhere bears the generic characteristics of determinateness and unequivocalness and asymmetry.

Regarding now the demand for a transcendent as such a biological implication, we can return to the consideration of the possible criticism above suggested, namely, that the *bare implication* is sufficient, that nothing need *exist* to 'fill it out,' etc. This is something like what the Kantian position would be—substance and cause implied—but the thing-in-itself as real causal agent left out. It is one possible type of pragmatism or of radical empiricism.

As concerning such a possible position it may be said that if it is a *proof* for the existence of a transcendent that is asked for, then there is as much proof in this case as in any other. For that which is implied is, in general, at least, provable, indeed, in one sense, *proved*. Also in the case of purely logical implication, for example, in a series, that which is implied has as 'full' an existence, ideal or subjective or what not, as that which implies, and this 'existence' is therewith proved. Quite analogously with another kind of implication, one whose basis concerns success and not merely formal correctness, and which is of something external to the inference itself and to conscious events and different in kind from these, the fact of the implication may be regarded as a *proof* for the *existence* of that which is implied. But it is a proof for that which of itself is not of the nature of proof, i. e., of propositions. Its *formulation* may be capable of propositional proof, but, with that, such a proof may transcend itself, referring to something extra-propositional. On the other hand, if we return to the first possible criticism, that it is merely an *assumption* or *postulate* that the transcendent exists, made, indeed, as the most general presupposition of all the physical sciences and as a means of meeting the demands for a regularity, etc.; but that, therefore, there is no proof for this, at least *a tergo*, because not deducible from any more general principle, then this last critical conclusion may perhaps be admitted.

But the *necessity* of the *assumption* for all the physical sciences remains; and the reply may be offered that science does not attempt to do the impossible, namely, in this case to get an infinite regressus of propositional proof. For this reason and in this respect all truth is independent of proof, else were no truth possible; nor is absence of proof disproof; nor does an assumption determine the existence or non-existence of that which is assumed. Accordingly, from this standpoint, the justification of the assumption of the transcendent is not a logical, but a biological one; 'instrumental' knowledge is possible and of use provided only that more is assumed than is

proved; the assumption contains no contradiction; and that which is assumed may exist independent of the assumption.⁴

Free from being affected by criticisms from either of these sources, the existence of the transcendent as the *Inbegriff* of all not-individually-conscious in nature and as an independent, permanent, regular and uniquely causal agent, stands, *proved* by its 'biological' implication, as the ground for the validity, that is, the success of one kind of cognitive experience, the prediction-inference. Upon this existence the purely formal correctness of the inferential process in no way depends or is decided; upon the two together with correct data, success does depend.

At this point it is possible, however, that another objection may be raised by the radical empiricist and others that the transcendent as a matter either of assumption, or of implication, or of derivation from the concept of uniformity, is for these very reasons as well as for others 'in' experience.

In the first place, as bearing thereon, that which can not be denied is that the transcendent is not '*contained in*' the same experience, the particular inference-experience, whose success it conditions. It is in some respect 'other' than this latter, whether, if regarded as an *assumed* transcendent it is 'in' the assumption, or as 'implied' it is in some way 'other' than and yet 'in' the implier, or as derived from the concept of regularity it is 'in' the concept. But that is not to say that as 'in' it is '*contained in*' any of these. Indeed, the transcendent itself may be 'other' than these and anything purely psychological, propositional, or logical upon which they may depend, so that, with an indefinite regressus of assumptions and inferences, etc., it is *always* '*beyond*.' This can mean *only* that just as we have seen that nothing can be *deduced* from its existence, but only from the general *assumption* of this, and, conversely, that its existence has nothing to do with the formal correctness of the deduction but only with the success of this last, the transcendent is wholly 'outside' this logical and psychological series, in the sense that it is different in kind from and independent of it. In fact, that there was this difference in kind we have already seen to be implied and so proved biologically; it is implied that the transcendent is permanent, uniform, self-determining, etc.; the inference and conscious events are irregular, fleeting, etc.

And yet, if in this sense the transcendent is 'beyond' each and any and every cognitive experience, whether this be assumption, or

⁴ Compare, as in essential agreement with the views expressed in this paragraph, some of the discussions contained in '*Die Dogmen der Erkenntnistheorie*.' F. von. Leipzig, 1902.

gment, or concept, there also seems to be undeniably some manifold of its being 'in' these individually and in general, and therefore experience.' How can it be both 'in' and 'beyond' at the same time? And if it is a case of assuming or implying a transcendent, can it be independent? Yet that it is this is necessitated as a condition of success. Otherwise each and every inference, if formally correct, would be the ground of its own success. How then can it be simultaneously dependent and independent? Both these questions and the answers to them strike, I believe, to the very root of the 'nature and structure' of the cognitive experience. Yet I should venture to suggest that the analysis both of the implications of logical cognition and of implication itself enables us to understand how these seemingly paradoxical relations are possible.

To restate one of these problems somewhat, it may be said that, on the one hand, cognition, both as a matter of implication and for other reasons also, as I shall show subsequently, transcends itself, and points to an 'other' 'beyond' itself, and demands this 'other' as an independent agent. Yet how can this 'other,' 'transcendent' as it is called, be 'independent' when, on the other hand, as implied, it is not 'in' experience? The possible solution of this difficulty lies first from the generic characteristic of implication; that that which is implied is 'in' the implier and yet 'beyond' in the sense that the very structure of the relation of implication is constituted so that, in some respects, really existing 'other,' which in some way makes the implier what it is; and that the relation is at the same time determinate and unequivocal. Secondly, however, a solution emerges from the fact of there being two kinds of implication, springing from different bases; consequently, there is the possibility of two kinds of 'beyonds,' each with its differentia of really existing realities, in one case fleetingness, etc., in the other permanence, regularity, but in both cases *proved* existences.

With the species, then, the generic paradox of implication that the essence of the implier should in some way be constituted by that which is 'beyond' and 'other than' itself, etc., grows in wonder. In the species, the logical, there is a mutual determination between implier and implied; the latter constitutes the essence of the former in much the same way as the former does of the latter; still the relation is asymmetrical.

But in 'biological' implication the paradox is most marked. Here the 'other,' the transcendent, implied as the condition for success, does not imply 'reflectively.' In fact, it is implied as that which is the very ground of the existence, that is, as the determinant of that which implies it; as that which is independent of, and yet the

ground of, its own implication. It is implied as the self-existent, to be brought 'into experience' only when it determines the existence of an experience which shall imply it. All this constitutes the *asymmetry* of biological as opposed to that of logical implication. Thus the question is answered as to how the transcendent can be both 'beyond' and 'other than' and yet 'in' an assumption, or judgment, or inference process. It is one 'term' in the relation of biological implication in which the subjectively limited experience is the other term. But there remains the question, how the transcendent can be independent, when, as either assumed or implied, it is 'in experience.' Is it not, therefore, dependent? The solution of this problem comes from the peculiarities of biological implication as a species. In accordance with the very distinctive asymmetry here it may be said that only the implication of the transcendent and not its existence is immediately dependent on that which implies it. Likewise, it may be said that as that which is known it is dependent on that which knows only for its being known. It does not 'follow from' that which implies it; only the *statement* of its existence does this. In general, to admit or assert that the transcendent is dependent in one respect on its implier, namely, in respect to its being implied, does not necessitate or warrant the assertion of or carry with it a dependence on this implier in all respects. If *A* is dependent on *B* in so far as it bears a certain relation to *B*, the dependence may be limited to the extent of this relation; it may be a dependence only in respect to and for this relation. A simultaneous dependence in one such respect and independence in all others is quite possible. 'Really existing things' can get into and out of different relations. They are dependent on other things only for their *relation* to other things. All this may be asserted to hold good of implication. We can, accordingly, conclude that, dependent for its implication upon an experience implying it, and for its being known upon an experience knowing it, the transcendent is independent in all other respects, as it is implied that it must be as a condition for the success of alogical knowledge. Thus, the second of our above questions is answered.

It may be admitted, then, that, at whatever point in the readjustment of experience the demand for a transcendent or the assumption of it may appear, it is 'in' this new experience in some respects. But an exact formulation of this relation is always possible, namely, that the transcendent is 'in' such a readjusting experience in the way that the implied is 'in' the implier; in a way, therefore, perfectly compatible with its being also 'beyond' at the same time. The further formulation is possible that, as

'beyond,' the transcendent is independent of its implier in every respect except for its implication and, therefore, for its being known. Both the 'in' and the 'beyond,' and the dependence and independence, in general, the nature of the relation between the transcendent and logical cognitive experience, of whatever specific type the latter may be, can thus be stated definitely and exactly. It is a relation with the generic characteristics of all implication and the specific ones of 'biological.' The relation, constituted by a simultaneous 'in' and 'beyond' and quite compatible with a 'dependence' in one respect and an independence in others, is identical with '*transcendence*' from one standpoint, and with implication from another. It is, too, *determinate* and *unequivocal*, and the asymmetry is of a kind specifically different from that of logical implication. The alogical cognitive experience as a term in this specific relation transcends itself in accordance with the peculiarities of the relation. Accordingly, although 'beyond' experience, the *transcendent* as implied 'in' experience is *known*. It is not a thing-in-itself.

As a result of the distinctions and formulations which have been made in expounding the nature of the demand for a transcendent and of the response to this, etc., it is possible, therefore, to state the nature and structure of 'experience' with a sharper terminology. Thus, in my former article 'experience' was by definition limited to the bounds of the individual.

If, now, both because no one is willing to accept 'in' experience to mean 'contained within' these bounds, and because in the resolution of the conflicts in a first, purely subjective, experience, a second experience, in which a transcendent is assumed or implied, follows or is necessary, it be *claimed* that, therefore, with the transcendent 'in' this experience, the bounds of the individual experience have been broken or extended so as to *include* the transcendent; if this claim be advanced, even then *a perfectly definite statement* (1) *of the relation of the new and so-called wider experience to the first, and* (2) *of the relation of the transcendent to the subjectively bounded experience and in the wider experience, can be made.* The basis for such an exact formulation is contained in the analysis presented in the preceding paragraphs.

As to this claim, however, I think it is essentially the position advanced by some of the radical empiricists, but not always stated by them in a way to eliminate the obscurity of their meaning. It is their view that everything is 'in experience' and that nothing 'beyond experience' can be known; but they do not define the 'in.' For them experience at first is in some way impersonal, and out of it, by way of getting order and harmony and adjustments, etc., sub-

ject and object, self and not-self, the conscious and the non-conscious, the transitory and the constant appear in functional relation to each other, and as necessary to the resolution of the conflicts in the 'living flow' of experience. But in criticism of this it is to be emphasized as an undeniable fact, I think, that it is not this experience with which we actually start, but that such an impersonal experience is one *constructed* by way of solving the problems presented in a purely subjective and individual experience.

Accordingly, it is possible with clearness and definiteness, first, to define and retain this individual experience as a term; then to define this wider experience as that *beyond which nothing is known, and as that which contains both the self, with its subjective experience, and the transcendent*, the universal not-self or whatever it may be called, as the necessary correlative function of self or subject, etc.

Then such a wider and all-inclusive experience will bear *the same relation* to the individual experience as, put in another way, the whole as a wider experience consisting of individual experience plus its implications bears to individual experience as a part. In a similarly exact manner it is possible to formulate the other relations which were suggested above.

In reality, the difference is largely one of terminology, and the relations are essentially the same; but it is relations with which we are most concerned and which we wish to get at, while terminology is a matter of advantage or disadvantage. Here, however, the disadvantage seems to lie with those who use experience in the wider sense as including all. The disadvantage comes from the twofold extension of, and therefore possible ambiguity in the use of, the term experience. It becomes especially noticeable, when, because of this ambiguity, the statement that everything is 'in experience' is interpreted to mean that it is within the bounds of individual experience. Such an interpretation, identical as it is with that of subjective idealism, is not undeserved nor should it be unexpected by those who, although they make extensive and most frequent use of the term experience as designating the balm for all our metaphysical woes, nevertheless fail to tell us, except in a very nebulous way, both what they mean by it and what its 'formula' and structure are.

In my next article I shall consider the questions of the 'transcendence of knowledge' and the 'correctness of data.'

EDWARD G. SPAULDING.

PRINCETON UNIVERSITY.

SOCIETIES

SECTION OF ANTHROPOLOGY AND PSYCHOLOGY OF THE NEW YORK ACADEMY OF SCIENCES

REPORT OF THE SECRETARY

THE Section met at Princeton, on February 26, 1906, in conjunction with the New York Branch of the American Psychological Association. Professor MacDougall occupied the chair. The following are abstracts of the papers read:

Method in Esthetics: A. L. JONES.

A discussion of the relative value of the empirical and the metaphysical methods.

A Psychological Theory of the Origin of Religion: IRVING KING.

Psychologically, religion can not be considered as the outgrowth of a special instinct or perception. It is rather a construct in various individuals, appearing in successive generations through the agency of certain stimulating social situations which are perpetuated by social heredity. The religious consciousness may be called an attitude which has been built up with reference to certain types of objective conditions. It is most nearly related to the valuational attitudes, of which it may be said to be a specialization. The particular aim of this paper was to show how the origin of the sense of value could be traced in primitive life and how the religious consciousness could be shown to be differentiated therefrom. It was held that the problem was chiefly one of determining the influences which would tend to deepen and render permanent the value of consciousness. It was pointed out that the tribe or social group furnishes all the conditions needful for the transformation of simple fleeting values into permanent religious ones.

The Detection of Color Blindness: VIVIAN A. C. HENMON.

This paper will be published in full in a later issue of this JOURNAL.

Color Sensations and Color Names: R. S. WOODWORTH.

The results of Woodworth and Bruner tend to the conclusion that the color sense is essentially the same in widely different branches of the human species, and in particular that the more primitive races show no special deficiency in the perception of blue. The contrary conclusion of Rivers, based on his tests of different races, is susceptible of some adverse criticism. The absence of a name for blue in many languages, and its late development in all, are to be ex-

plained on psychological rather than physiological principles. The fundamental principle involved is that of the objective reference of sensations. Color is conceived and named not as a quality of sensation, but as a quality of objects. Moreover, it is not a directly practical quality of objects, but owes its importance to its power of serving as a ready sign of more practical inner qualities and conditions of objects. The tendency is to name the inner and practically important quality rather than the sign; thus, we speak of well-done and under-done meat rather than of brown and red meat, and of clear and cloudy skies rather than of blue and gray skies. A further principle that must be borne in mind is the 'law of dissociation by varying concomitants.' Unless a color appears in a variety of objects it is not likely to receive an abstract name. In primitive conditions of life, red and yellow, being the colors and distinguishing marks of animals and animal substances, as well as of ripe fruits, appear in sufficiently varied and important situations to account for their having received names early. Green is principally important as a sign of growing vegetation, and need, therefore, have no name except that which distinguishes the growing from the dead or dried condition. Blue is principally important as a sign of the weather, and is, therefore, represented by a weather name rather than by a color name. The development of an abstract name for blue seems to have resulted from the multiplication of blue objects, dependent on the introduction of blue pigments.

The Practise Curve as an Educational Method: J. McKEEN CATTELL.

Curves were shown giving the records of two children copying at maximum speed the same passage and a new passage on the typewriter for 365 consecutive days, and for memorizing ten German words and the English equivalents for 140 days. Experiments were made once a month to measure the transference of practise to other functions, and the curves were shown. It was argued that the practise curve has certain advantages as an educational method. The child plots his curve and becomes interested in his progress, viewing his performance in an objective fashion; he works with maximum effort and attention for a short time; his main competition is with himself as he seeks to surpass his record. The experiment can be so arranged that all the work of the child centers about it—the three *R*'s and the rest—supplying a unity and an interest that are often lacking in our schools.

A New View of 'Mental Function': HOWARD C. WARREN.

From the genetic standpoint the biological functions may be classed as specific or general. The latter include nutrition, repro-

duction and defense, which occur in various forms throughout all species. The distinction suggests a similar division of the functions of consciousness. The problem of the paper was to distinguish the fundamental or general mental processes from the complex. Psychologists lay too much stress on the human senses, which are only particular evolutionary products and furnish merely the natural-history material of the science. Even the division into cognitive, affective and conative is unsatisfactory, since these processes are combinations of more fundamental ones. The discussion led to the formulation on genetic and analytic grounds of five fundamental functions, *viz.*, sensibility, intensity modification, quality differentiation, association and discrimination, as the simple processes which the data furnished by sensory and central stimulation undergo. The reader examined the character of these and showed their lack of adequate physical analogy. He analyzed the part they play in attention, perception (association of differentiated elements), imagination, conception, judgment, reasoning, appreciation, self-consciousness, etc. From the standpoint of these functions, the relation between genetic and analytic psychology appears in a new light, as does also the distinction between mental functions and elements. The study of physiology, though important for psychology, is involved in it only as physics and chemistry are involved in physiology. The recognition of such fundamental functions affords the only satisfactory starting-point for an independent science of psychology.

The 'Four Powers': D. S. MILLER.

Arnold tells us that human nature in its civilized completeness requires the development of four powers: the power of conduct, the power of intellect and knowledge, the power of social life and manners, the power of beauty. This involves (what Arnold hardly acknowledges) the independence of beauty as a form of well-being, an end-in-itself. And to the list, on a fair survey of human life, we must add the power of the affections, the power of religion, the power of bodily life and the senses. Finally, it has to be noted that conduct in its full sense includes all; it compasses human life and assigns a place to each of the powers, from morals, in the narrower sense, to beauty.

The Nature of Judgment: W. H. SHELDON.

The linguistic expression of judgments, in so far as it is uniform throughout all languages, can be used as a guide in detecting the essential features of the process of judgment.

Reality as Possible Experience: M. PHILLIPS MASON.

The concept of reality as possible experience, developed in Royce's 'The World and the Individual,' is not, as Royce would have us

believe, the same in spirit as it is in Kant. For Kant the interest lies in the possible, the fundamental conditions of experience, while for Royce the emphasis is laid rather on experience itself; and for that reason he makes a distinction between actual and possible experience, between experience which is actually experienced by human beings and that which is not experienced by any human being, but which might be if conditions were other than they are. Since Royce finds possible experience, taken in this sense, equivalent to no experience so far as human beings are concerned, it seems to him necessary to assume an absolute experience to include the purely possible experience, thus setting aside possible experience as an inadequate concept of reality. Had he taken the concept in the Kantian sense it would not have been necessary for him to develop a concept of the absolute. For possible experience as a system of the conditions of experience is a sufficient solution of the problem of experience. A higher unity of what these conditions involve with experience is unnecessary and based on a mistaken motive. The only reason there is for developing a concept of reality is to unify experience, and such a unity we have in the fundamental conditions of experience, the world of possible experience.

Misconceptions of Realism: W. P. MONTAGUE.

Realism is the theory that *esse* is not *percipi*, that objects do not depend for their existence on being experienced, and that, as a consequence, they can exist continuously through those intervals when no one is aware of them. This view is often falsely interpreted to mean (1) that consciousness can not change or in any way affect objects; (2) that real objects are transcendent things-in-themselves, lacking all experienced qualities; (3) that real objects can only be inferred and not perceived. In answer to the first of these supposed implications, which would commit realism to the doctrine of the epiphenomenality of consciousness, it is sufficient to point out that one thing can, so far as its existence is concerned, be independent of another thing or of its relations to that thing and can yet be affected by it. Knowledge of an object at one moment can enable the knower to change it at a later moment without prejudice to its continued existence during the intervals when it is not known. As regards the second implication, it may easily be seen that the quality of a thing has no necessary connection with the fact that it is perceived, except on the idealist's assumption that consciousness confers qualities as well as existence upon its objects, which is just what realism denies. As to the third misconception of realism, it is somewhat more excusable than the others because the majority of philosophical realists

have been tempted by the supposed exigencies of the physiological theory of sense-perception to adopt an epistemological dualism or representative theory of knowledge. Realism is not, however, bound up with dualism and might without the slightest inconvenience defend the common-sense view that perceptual consciousness extends to and reveals real objects outside the organism and is not confined to the comprehension of internal copies or ideas of these.

R. S. WOODWORTH,
Secretary.

COLUMBIA UNIVERSITY.

REVIEWS AND ABSTRACTS OF LITERATURE

The Afferent Nervous System from a New Aspect. HENRY HEAD, W. H. R. RIVERS and JAMES SHERREN. *Brain*, 1905, XXVIII. Pp. 99-115.
The Consequences of Injury to the Peripheral Nerves in Man. HENRY HEAD and JAMES SHERREN. *Ibid.* Pp. 116-338.

These two articles are important to psychologists and should be read by all who are interested in the analysis of pressure and skin sensations. The material upon which the articles are based is a series of cases in which there was injury or division of some of the peripheral sensory nerves.

A sample observation which led to the research is as follows: "When the median nerve is divided, sensation is entirely lost over a considerable part of both index and middle fingers. Over the palm, within the area said by anatomists to be supplied by this nerve, sensation is usually diminished and not completely abolished. In a similar manner, division of the ulnar nerve produces complete insensibility of the little finger and of a variable portion of the ulnar aspect of the palm; but partial loss of sensation is found over a large area of the palm and the ulnar half of the ring finger. Such is the usual statement of surgeons and anatomists" (p. 100).

This statement of the results of injury led the authors to put to themselves two questions: 'What is meant by diminished sensibility?' and 'To what is it due?' Accounts of conditions in various forms of nerve lesions are given which indicate the answers to these questions. The diminished sensibility was found to be a true loss of certain sensations and the retention of others. Thus from careful study of the cases the authors have been able to differentiate some sensory elements which in normal people are with difficulty or not at all discriminated.

The experimental results are given from about eighty cases of injuries to the peripheral nerves, particularly to those of the hand and arm. Forty-six text figures illustrate the result, and there are eight excellent tables. The first article gives a general theoretical consideration of the results of all the work, and the second article is an account of the observations

and experiments. We shall consider first the results of the experiments. In this article the work is divided as follows:

1. Nerve supply of the palm of the hand.
2. Recovery of sensation after injury to the nerves of the hand.
3. Recovery of sensation after incomplete division of the nerves of the hand.
4. Nerve supply of the forearm.
5. Injuries to the brachial plexus.
6. Loss of sensation in the arm from division of posterior nerve roots.
7. Nerve supply of the lower limb.
8. Deep sensibility.
9. Sensations of heat and cold.
10. The compass test.
11. Hair sensibility.
12. Hyperalgesia.
13. Changes in the skin that follow injury to peripheral nerves.
14. Changes in the nails after injury to peripheral nerves.
15. Paralysis and other muscular changes.
16. Theoretical.

Most of these sections have observations of interest to psychologists, but we shall consider only the main points.

If a mixed (sensory and motor) nerve supplying any portion of the body is cut, there is found to be a complete loss of all kinds of sensation from part of the region supplied by the nerve. Pain, pressure, light touch and temperatures are not felt, muscles can not be moved, and the positions of the parts are not appreciated. If, however, only the branches supplying the skin be divided, the muscular branches remaining intact, the muscles can be moved, movement properly sensed, and the part is sensitive to pressures. In such a case (pp. 214, 327), in which the radial and external cutaneous nerves were divided in the forearm, the authors found that all the movements of the hand and fingers were perfect, but "the skin over the back of the thumb and the radial half of the back of the hand were insensitive to light touch, to prick and to all forms of heat and cold. But over the whole of this area pressure was at once appreciated. . . . Touch with the blunt head of a pin was localized with remarkable accuracy, but our patient could not distinguish pressure with a head from a prick with a point of a pin, nor could he distinguish between pressures with a point of a pin and with a steel rod 2 c.m. in diameter (p. 327). Even when separated to 5 c.m. and applied transversely, the compasses were appreciated as a single 'push' or focus of pressure. Any stimulus dragged across the surface so as to move the skin over underlying parts was at once appreciated. . . . But if the skin was lifted the same method of stimulation entirely failed to evoke any response, a proof that whatever sensation had been previously present was due to the underlying structure." A number of cases which were observed demonstrate that the pressure sensations are carried by the nerves which supply the muscles, etc., and that these nerves accompany the tendons.

This condition, in which all forms of skin sensibility are lost, but pressures are appreciated, has been called *deep sensibility*. The conclusion which is psychologically important is 'that so long as the sensibility of the skin is unaffected, it is impossible to investigate the sensations evoked by pressure.' It is even difficult to determine with certainty the condition of the sense of passive position in the joints when superficial sensibility is present. The skin should be totally insensitive to all stimuli before deep sensibility can be satisfactorily tested, a condition which greatly limits the possible opportunity of examination.

Bounding such an area in which there is present only deep sensibility, there is a zone, of varying extent in individual cases, in which there is loss of sensory appreciation of light touch and of medium temperatures. Such sensibility has been called by the authors *protopathic*. In this area a prick may be so disagreeable that the patient withdraws his hand. "He complains that it causes a feeling of pins and needles, not only at the point pricked, but also widely over the intermediate zone. Asked to locate the spot pricked, he may be able to do so, but complains that the pain produced seems to him to be spread over a large surface, or even to be in two places at once, such as the base of the finger and the middle of the palm. Moreover, when tested with compasses, the points can not be distinguished as causing two sensations, even when separated from one another to the greatest extent possible within the intermediate zone." Water below 20° C. is felt as cold, but it makes no difference whether the water be 0° C. or 18° C. Above 45° C. or 50° C. water is felt as hot, but it is doubtful whether or not there is true heat sensation. The patients call the sensation hot or burning. Intermediate temperatures are not felt. In the normal area, of course, all forms of sense stimuli are appreciated. Those which are peculiar to the normal area are light touch, the appreciation of twoness, as for example in the double-point threshold, and the medium temperatures. This form of sensibility is given the name *epicritic*.

Occasionally patients were found in whom the area of loss of protopathic sensibility did not entirely cover the area of loss of deep sensibility. In such a case the skin is sensitive to light touches, but there is no appreciation of pressures as such. One instructive case of this character is that (p. 108) of a patient in whom an operation 'produced profound loss of sensation to prick over the one half of the face, unaccompanied by an equivalent loss of sensibility to light touch. Here there could be no doubt that the patient could appreciate warmth, but not heat, and he many times stated that a temperature of 55° C. was neither hot nor cold, but that 34° C. was undoubtedly warm.'

If a nerve which has been cut is sutured and the wound heals well, there is a gradual return of normal (epicritic and protopathic) sensibility to the anæsthetic and partially anæsthetic areas. First, the totally anæsthetic area gradually grows smaller, and there is a return of the pressure sensation. The recovery begins in about ten weeks, and in about ten weeks later pressures may be felt over the whole area. Then

there is a restoration of the sensibility to prick, to pain, to extremes of heat and cold. At this time the disagreeable radiating effects of the stimuli are present. Finally, the forms of epicritic sensibility begin to be felt in the area. The line of demarkation between the normal and abnormal is no longer well marked, and the area gradually grows smaller. Eventually, after two to four years, there is a complete return to normal function.

The characters of the lesions in most of the cases which appear at the hospitals are such that the results are not simple. Moreover the patients are not good observers. Experiments must be made of the conditions as they are, not as one would like to have them. The authors felt the necessity, therefore, of a carefully localized lesion and of a skilled observer for the determinations of the sensory changes. For this reason one of them (Head) had his radial and external cutaneous nerves divided near the elbow to be able to compare the normal sensitivity and the sensory changes following the operation. The results of this experiment—which was most painful and not without considerable danger—are given in part in the present article, but a fuller account is promised. We shall await with much interest the complete report of this work. “The knowledge of the properties of deep sensibility gained from this experiment,” it is said (p. 282), “enabled us to understand the full significance of the various forms of residual sensation discovered after division of peripheral nerves.” The promise is made that ‘in a subsequent paper it will be shown that, so far as protopathic sensibility is concerned, at least three end organs exist and each of these reacts only to a specific stimulus.’

The conclusions which seem justified from the experimental results are as follows (pp. 111, 114, 298): The sensory mechanism in the peripheral nerves is thus found to consist of three systems:¹

I. “Deep sensibility, capable of answering to pressure and to the movement of parts, and even capable of producing pain under the influence of excessive pressure, or when the joint is injured. The fibers, subserving this form of sensation, run mainly with the motor nerves, and are not destroyed by division of all the sensory nerves to the skin.”

II. “Protopathic sensibility, capable of responding to painful cutaneous stimuli and to the extremes of heat and cold.” “It also endows the hairs with the power of reacting to painful stimulation.” “This is the great reflex system, producing a rapid, widely diffused response, unaccompanied by any definite appreciation of the locality of the spot stimulated.” “These fibers regenerate rapidly after the ends of the nerves have been reunited; if the operation has been successfully performed sensation begins to return within from seven to ten weeks. In any peripheral nerve the distribution of the protopathic fibers usually overlaps greatly the area supplied by the fibers of the adjacent nerves.”

III. “Epicritic sensibility, by which we gain the power of cutaneous localization, of the discrimination of two points, and of the finer grades

¹ These excerpts are taken from both papers, and as here given do not conform in every instance to the sequence in which they originally occur.

of temperature, called cool and warm." "These fibers regenerate more slowly than those which subserve protopathic sensibility after reunion of a divided nerve, and sensation does not usually begin to return in less than six months under the most favorable conditions. The distribution of these fibers in the larger peripheral nerves, such as the median and ulnar, overlaps little compared with a great overlapping of the protopathic supply." "As soon as a sensory impulse reaches its first junction in the spinal cord, it becomes shunted into tracts devoted to the conduction of impulses grouped in a way different from that found in the peripheral nerves. It is no longer a question of protopathic, epicritic or deep sensibility; the tracts in the central nervous system are devoted to the conduction of impulses concerned with pain, heat, cold and touch."

"The system we have called protopathic in the skin is one with the afferent fibers of the sympathetic as they supply the viscera. In both cases the sensation is badly localized, radiates widely and is frequently referred to parts other than those stimulated. . . . The whole body within and without is supplied by the protopathic system. The fibers of this system in the skin may be spoken of as somatic, those to the internal organs as visceral protopathic fibers. . . . Another set of afferent fibers peculiarly associated with impulses of movement and pressure exist in connection with the Pacinian organs. In the body and limbs, an analogous system is found peculiarly susceptible to pressure, to the localization of movement and to the appreciation of position. The fibers of this system run in conjunction with the motor nerves. In addition to these two systems, which are distributed to all parts of the body within and without, the surface of the body only is supplied by a third system, which we have called epicritic."

This work illustrates well the value of a study of the abnormal for the understanding of normal processes. Not only is normal psychology of value for the understanding of the abnormal, but pathological or abnormal psychology can give new points of view to the student of normal mental life. It is safe to say that the work of Head and his collaborators is the most important contribution to the study of skin and pressure sensation which has appeared in many years.

SHEPHERD IVORY FRANZ.

MCLEAN HOSPITAL, WAVERLEY, MASS.

The Experience Philosophy. WARNER FITE. *Philosophical Review*, January, 1906. Pp. 1-16.

Professor Fite is convinced that a fundamental fallacy underlies all 'experience-philosophy,' by which term he means any philosophy based exclusively on experience and declaring that the object of consciousness has no real existence apart from its presence in consciousness. His critique is directed, first, against the assumption of the series of experiences as *real* and, second, against the *reality* of the present experience.

The series of experiences, although taken only as a working basis, must still involve a belief that the past fact of experience is in some

way more valid than a past fact which can be inferred, but has not been experienced. The author questions the validity of this belief. According to his analysis, the only difference in the two facts is in the recognition which may attach itself to the past experience, and recognition is found to be only a degree of *clearness* which the image possesses together with the idea that the experience is *mine*, which means that my body is the central figure of the experience. In so far as this distinction signifies anything beyond the degree of clearness, it means that my body is a *reality* apart from experience. The past fact that the tree which I see felled before me once stood, is equally real, and my judgment is reached by the same sort of reasoning from the same sort of premises.

That recognition is a variable phenomenon we must all admit, yet practically we *do* attach greater value to things remembered and recognized than to things unrecognized or inferred, and without departing from the author's own terms, it would seem that a clearly recalled experience might fit into one's scheme of thought more conclusively than would be possible in the case of an inference denied the factor of recognition.

The second point, concerning the reality of the present experience, turns on the question as to what is really 'given' on which one may proceed to build. The present state of consciousness may be largely a matter of sense-perception, so called; it may also be inferential, imaginative or reproductive in nature. Are these all equally 'given,' and, if so, why not build one's world on imaginary as well as on sensational elements? As a matter of fact, one restricts the *real* or 'given' to the perception of objects in the outer world. On what is this distinction of validity based? Here, again, it is merely a matter of clearness, *i. e.*, mechanical relations of my body and other bodies, and if this means anything beyond additional associations it means a reality outside my own consciousness.

Now it is freely admitted that this step from conscious object to object of consciousness is not easy. Indeed, nothing less than the problem of knowledge is here involved. But, questions the author, is there any more reason for throwing away the tree which inference tells me produced the sensation, than the man in whom it was produced? In so far as the distinction subject-object is valid, the series is valid. But neither is an *ultimate*. Indeed, the search for an ultimate is an *ignis fatuus*. There is no such thing. How can one conceive a foundation stone which supports all, yet which nothing supports? There is not even a logical necessity to search for an ultimate, as most philosophers have wrongly apprehended. Induction and deduction are not two opposed methods, but two phases of one. Let us, then, accept all such data as seem useful, judging validity by usefulness. It is not a firm foundation that we need strive for, but a democracy of data all leading equally well from one to the other—an idea which, by the way, is not new to students of modern positivism.

And so our author concludes we should, 'with the realists, hold that reality is not limited to experience, and that the progress of science

represents . . . an advance in genuine knowledge of an external world; and, with the idealist, we should hold that, nevertheless, *our* objective world is a construction; and, with the pragmatist, that it has been constructed in response to the demands of practical life.'

It is a rather hard pill to swallow, this mixture of realism and idealism. Realism it is, apparently, whenever I take the standpoint of external observer and look at myself and others, idealism it is when *in propria persona* I become the percipient subject. Still, since Professor Fite regards these only as more or less temporary foundations on which he proposes to build—to be consistent he might have said, data which he intends to expand—we can perhaps abide the further question until the structure has been reared, or the field at least surveyed.

ROBERT MORRIS OGDEN.

UNIVERSITY OF TENNESSEE.

Les états mystiques. BRENIER DE MONTMORAND. *Revue Philosophique*, July, 1905. Pp. 1-23.

In the first ten pages of this article the mystical ecstasy of the *orthodox* mystics is described in four degrees: quietude, union, ecstasy, spiritual marriage. It is the division made by St. Theresa in the 'Châteaux Intérieurs.' In the second section (pp. 10-14) are summarized the views of Ribot, Godfernaux, Récéjac and Leuba on ecstasy. In the third and last section (pp. 14-23) Montmorand states his conception and his explanation of the mystical ecstasy.

His first claim is that the psychologists named above 'confuse under the name ecstasy phenomena of very different nature.' He would make the following five classes:

1. Physiological ecstasy, or the ecstasy of philosophers. It is the outcome of hypertrophied attention. Archimedes during the capture of Syracuse is given as an instance.
2. Hypnotic, or Buddhist, ecstasy.
3. Cataleptic ecstasy.
4. Hysterical ecstasy.
5. Mystic ecstasy, of the orthodox mystics.

Although these five kinds of ecstasy show marked external analogies, they have, we are told, evidently no common measure. Physiological ecstasy is characterized by extreme intellectual activity, while Buddhist ecstasy and cataleptic ecstasy are accompanied by loss of consciousness. Hysterical ecstasy 'is made up of hallucinations which follow each other in two alternating tableaux,' while physical ecstasy is devoid of hallucination. We need not stop to examine the adequacy of his classification and the correctness of the accompanying descriptions. Let us simply say that Montmorand did well to remind those of us who treated ecstasy a little too much 'in the lump' of the more or less important differences which exist between its several varieties.

The main thesis of the author is not that there are several sorts of ecstasy, but that the orthodox mystical ecstasy differs essentially and funda-

mentally from the other kinds. It differs from them in its cause and in its effects. Mystical ecstasy is neither the result of a direct stimulation of the nervous system (Buddhic ecstasy); nor of an hypertrophied attention (ecstasy of philosophers); nor yet a 'detached fragment' of a morbid process (hysterical ecstasy). Its effects separate it also from the other kinds of ecstasy: they are singularly beneficent, physically as well as morally. Mystical ecstasy is 'a kind of vivifying bath out of which one issues humbler and more courageous, better tempered for effort and for action.'

In order to account for what seems to him peculiar in the apparition and in the effects of the mystical ecstasy, Montmorand uses the familiar conception of subconscious activity. "In the first period of ecstasy, subconscious activity brings to the self, in the form of symbolic hallucinations (visions, revelations, internal speech), what Meyers calls *subliminal messages*. Later on, the ordinary consciousness [la conscience personnelle], becoming somnolent, is enriched, unbeknown to itself, by emanations from the subliminal consciousness, which, when the trance is over, blossom forth in generous resolves, holy desires, in virtues apparently spontaneous." To this explanatory use of the subconscious probably no one would object, provided nothing *extrasubjectif* be meant by subconsciousness. But that may not be the meaning of the author. On page 20 there is a surprising paragraph, somewhat ambiguously worded, which may mean that the author is not satisfied with a purely subjective conception of the subconscious, that he holds rather to the views of Meyers or to the hypothesis of James (conclusions of 'The Varieties of Religious Experience'). The suspicious sentence runs thus, "Those theologians appear to me to be better advised who admit that in the mystical ecstasy, knowledge is realized by supernatural means rationally inexplicable and quite incompatible with the process by which knowledge is usually gained."

One would have to be either very ignorant of the resources of psychological science or passionately desirous of believing in the supernatural to find support for this theological opinion in the facts described in this article. The independence of the mystical ecstasy from voluntary control and its two effects, physical well-being and moral elevation, do not call for a supernatural explanation.

JAMES H. LEUBA.

BRYN MAWR COLLEGE.

JOURNALS AND NEW BOOKS

VIERTELJAHRSSCHRIFT FÜR WISSENSCHAFTLICHE PHILOSOPHIE UND SOZIOLOGIE. November, 1905, Band 29, Heft 4. *Die Grundlagen des natürlichen Monismus bei Karl Christian Planck,—Schluss* (pp. 447-494): H. PLANCK. — A rather detailed discussion of space and time, causality, morality and human life, in which Spencer and

Planck are compared, with the conclusion that the latter is, first, more successful in showing the necessary relation between the fundamental law of identity and the law of evolution, and, second, more consistent in recognizing the consequences of the theory of evolution for any theory of society. *Zur sozialwissenschaftlichen und socialpolitischen Bedeutung der Naturwissenschaften, besonders der Biologie* (pp. 495-512): W. SCHALLMEYER. - The deficiency among office-holders in scientific and especially biological knowledge is noted, and the resulting conservatism, and failure to discover and apply scientifically the means, or to determine scientifically the ends, of the state. *Besprechungen*. F. Jodl, *Lehrbuch der Psychologie*: F. KRUEGER. J. A. Barth, *Wissenschaftliche Beilage zum XVI. Jahresbericht (1905) der Philosophischen Gesellschaft an der Universität zu Wien*: C. VON BROCKDORFF. P. Natorp, *Platos Ideenlehre, Eine Einführung in den Idealismus*: A. AALL. *Philosophische Zeitschriften*.

Barth, P. *Die Elemente der Erziehungs- und Unterrichtslehre auf Grund der Psychologie der Gegenwart dargestellt*. Leipzig: J. A. Barth. 1906. Pp. xii + 515.

Böhme, Jacob. *Morgenröte*. Herausgegeben von Joseph Grabisch. Munich: R. Piper und Co. Pp. xxii + 280.

Brotherus, K. R. *Immanuel Kants Philosophie der Geschichte*. Helsingfors: Aktiebolaget Handelstryckeriet. 1905. Pp. vii + 136.

Congress of Arts and Science, Universal Exposition, St. Louis, 1904. Vol. III., *History of Language, History of Literature, History of Art*. Pp. x + 682.

Frost, Walter. *Der Begriff der Urteilstkraft bei Kant*. Halle: Max Niemeyer. 1906. Pp. 135.

Mach, J. *Kritik der Freiheitstheorien*. Leipzig: J. A. Barth. 1906. Pp. viii + 287. 4.50 M.

Ollé-Laprune, Leon. *La raison ou le rationalisme*. Paris: Perrin. 1906. Pp. liii + 269.

Ostwald, Wilhelm. *Individuality and Immortality*. New York: Houghton, Mifflin and Co. 1906. 75 cents.

Revel, P. Camille. *Le hasard, sa loi et ses conséquences dans les sciences et en philosophie*. Paris: Chacormac. 1905. Pp. 393.

Rivaud, N. *Les notions d'essence et d'existence dans la philosophie de Spinoza*. Paris: F. Alcan. 1906. Pp. 216.

NOTES AND NEWS

THE following is the preliminary program of the conference of college and normal school teachers of psychology in Wisconsin and Michigan, to be held at Mt. Pleasant, Michigan, on May 24 and 25: 'Ideals in the Organization of Elementary Courses in Psychology,' J. R. Angell; 'Ele-

mentary Courses from the College Point of View,' J. R. Farley; 'Courses in Psychology for Students of Education,' N. A. Harvey; 'The Purpose of an Elementary Course in Psychology,' R. C. Hughes; 'The Relation of Psychology to Pedagogy,' E. G. Lancaster, John McManis; 'Some Advances in the Teaching of Pedagogy,' George Randels; 'Differences between College and Normal School Courses,' H. H. Schroeder; 'What Experiments are of most Value in Cultivating Careful Introspection,' M. A. Small; 'The Teaching of the Concept,' F. N. Spindler; 'A Phase of Genetic Psychology,' W. A. Trettien; evening address—'The Educational Value of Psychology,' J. R. Angell. Changes desired in statements of subjects announced in this program, or additional subjects, should be sent to E. C. Rowe, Mt. Pleasant, Michigan, or to J. R. Farley, Appleton, Wisconsin, before May 1, when the final program will be issued. In order that arrangements may be made for entertainment, all persons expecting to attend the conference should send their names to E. C. Rowe, Mt. Pleasant, Michigan, before May 20, if possible.

THE Philosophical Society of Berlin is preparing to honor the philosopher Fichte by the dedication of a monument to his memory. Fichte was largely influential in the organization of the Berlin University. He was its first rector, and the unveiling of his monument will celebrate the centennial of his entrance upon the duties of that office. Professor Gabriel Campbell, of Dartmouth College, is a member of the committee to receive contributions for the Fichte monument. He will be glad to receive offerings large or small which may be credited to an institution or to an individual. So many of our professors and teachers recognize in the University of Berlin an *alma mater* that some expression of appreciation from America would be a well-deserved and graceful courtesy at the Berlin centennial.

THE Academy of Moral and Political Science, at Naples, offers a prize of one thousand francs for the best unpublished essay on either of the three following topics: (1) 'The Concept of the Infinite in the Light of Recent Investigation'; (2) 'The Doctrine of Self-consciousness in Psychology, in Epistemology and in Metaphysics'; (3) 'The Philosophy of Language in Patristic and Scholastic Philosophy.' All papers must be written in either Italian, Latin, or French, and must be received by the *Segretario*, Filippo Masci, not later than September 30, 1907. Competing contributors may put their names upon their papers submitted, or papers may be presented anonymously; in the latter case, however, the paper must be designated by a motto which shall be enclosed also in a sealed envelope containing the writer's name. The papers for which prizes are awarded will be published in the *Atti*, and the authors will receive one hundred reprints. The envelopes containing the names of the authors of the papers which receive neither the prize nor the *accessit* will be destroyed. All competing papers will be preserved in the archive and no one will be permitted to copy from any paper except the author of it after satisfactory identification.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

ON THE NATURE OF INDUCTION¹

ANY proposition is susceptible to two sorts of proof. We can adduce premises that directly imply it, or we can adduce premises that indirectly imply it because they imply the falsity of its contradictory alternatives. In inductive reasoning we prove universal propositions by adducing as premises the particular propositions furnished by experience. Formal logic tells us that the value of a particular proposition consists in its power to disprove its contradictory universal rather than to prove its subalternate universal. We might naturally suppose that the evidential function of experience as a knowledge of particulars, was to disprove universal statements rather than to prove them, and that if a universal conclusion was proved true by appeal to experience, the proof would be based upon the disproof or elimination of alternatives. That induction is actually and always of this indirect type of inference, and that as such it is properly expressed by a disjunctive syllogism in the negative mood (*modus tollendo ponens*), is what I wish to show.

There is, of course, no novelty in the conception of induction as a process of elimination. Mill's canons are efficacious because they embody implicitly the eliminative principle. In Hobhouse and Aikins, to mention only two of the modern logicians, the principle is explicitly recognized, and the chief problems of induction are treated, especially by Hobhouse, from that point of view. Yet so far as I am aware there has been nowhere an attempt to identify induction in all its phases with the kind of indirect inference known as the *reductio ad absurdum*, and it has seemed to me worth while to make that attempt for two reasons: First, because the several inductive methods when viewed from this standpoint appear not as a group of disconnected principles, but as an organic system and hierarchy which is applicable in its entirety to every inductive problem and in which each principle has its own function and virtue by which it

¹ Read at the annual meeting of the American Philosophical Association, at Cambridge, December, 1905.

supplements the defects of the principles that precede it; second, on account of the new light thrown by the indirect theory of induction upon the general epistemological problem of deriving universals from particulars.

And now, by way of introduction to the more positive treatment of the subject, let us consider some of the difficulties involved in what is still, I think, the usual conception of induction. Induction when treated as a mode of direct inference is divided into two kinds, —perfect and imperfect. In perfect induction, we reason that as these *A*'s are *B*'s and as these *A*'s are all the *A*'s, it must follow that all *A*'s are *B*'s. It is clear that what is called perfect induction is only possible when the total number of individuals making the class is limited. Thus we can prove by this method that all the months in the year have less than thirty-two days, or that all the flowers in the garden are fragrant, but not that all bodies gravitate or that all men are mortal. In these latter propositions, which are genuine universals, the classes contain an unlimited number of members, and experience can never supply us with more than an insignificant fraction of them. In imperfect induction, which is supposed to be a degenerate form of perfect induction, we boldly conclude that because an infinitesimal portion of a class has been observed to possess a certain property the whole class will have that property. The methods or canons of induction are the principles that inform us when we can and when we can not take the inductive leap.

Now there is one circumstance in particular which might lead us to suspect that there was something radically wrong with the notion that induction is a degenerate form of perfect induction. Neither the actual number of positive instances observed nor the ratio of that to the total number has anything whatever to do with the degree of validity possessed by the induction. Perfect induction is essentially quantitative, depending, as it does, upon observation of all the members of a given class. The canons that guide us in making the so-called imperfect induction are, on the other hand, essentially qualitative, and not, as we might suppose, imperfectly quantitative. That is to say, it is never a question of observing almost all, or a bare majority, or even an appreciable fraction of the whole number of material bodies, for example, as evidence for the inductive generalization that all bodies gravitate. We contrive in the few cases under our control to eliminate by the methods of difference and especially of agreement all the characteristics of bodies that could possibly cause their gravitation except those of extension and inertia, and on the strength of this elimination we unhesitatingly conclude that a material body, merely as such (and hence all material bodies), will gravitate

And now that we have briefly considered the contradiction between inductive theory as exemplified in the supposedly archetypal syllogism of perfect induction, and inductive practise as exemplified in Mill's canons, we may look to see how this contradiction can be removed by treating induction as belonging essentially and exclusively to the indirect type of inference.

Every inductive problem indirectly, and the usual inductive problem directly, concerns the determination of a causal relation. A phenomenon occurs in which we are for some reason interested and we at once seek among its antecedents and consequents for phenomena which are related to it as cause and as effect. Defining a causal relation as the relation of universal concomitant presence, absence and variation of two phenomena, we must assume as the basal postulates of all induction (1) that every event has an antecedent and a consequent with which it is causally or universally related, and (2) that we can enumerate these possible causal relations, by the aid of perception and previous knowledge. Now let *M* be a phenomenon whose causal relations we are seeking to discover, and let *A* be an antecedent or consequent phenomenon which we suspect, or provisionally assume, to be, and which in reality is, causally related to *M*; we can then classify the possible causal relations of *M* with respect to *A* under five heads. This division may be briefly stated in the form of a disjunctive proposition which will constitute the major premise of a typical inductive syllogism. Thus we can say that

The cause or effect of *M* is either (1) a phenomenon symbolized by *X* that is related to *A* only casually or by chance; or (2) a phenomenon symbolized by *B*, *C* or *D*, which is collocated with *A* but not indissolubly; or (3) a complex phenomenon symbolized by *A B*, *A C* or *A D*, of which *A* is an indispensable part; or (4) a phenomenon symbolized by *a* which is an aspect, phase or degree of *A*; or (5) *A* itself. The four inductive methods of simple enumeration, difference, agreement and concomitant variation express the types of particular negative propositions furnished by experience, and as such they constitute the complex minor premises of the syllogism and serve to contradict or eliminate all but one of the alternatives set forth in the major premise. The conclusion is, of course, the categorical affirmation of the only alternative not eliminated. I shall now try to show how each of the inductive methods is especially suited to eliminate one of these alternatives and that the eliminative function is the only function that they could or do perform: First, then, to remove the possibility that *A* and *M* are connected merely by chance, we use the method of simple enumeration. We observe the frequency with which *M* occurs in conjunction with *A*, and compare this with the frequency with which *M* might be expected to occur

with *A* if they were quite independent. If the former frequency greatly exceeds the latter we consider the conjunction to be something more than casual. The *number* of observations required to eliminate the hypothesis of chance is thus strictly determined by the joint independent probability of the events in question.

Having eliminated chance by the method of simple enumeration, we next eliminate by the method of difference the possibility that *M* is causally related, not to *A*, but to the antecedents and consequents with which *A* is collocated. We find, let us say, cases in which *B*, *C* and *D* are simultaneously or successively present when the event *M* is absent. The results of such observations may be stated in the form of a particular negative proposition, as follows: Some cases of *B*, *C* and *D* are not cases of *M*, which means that the universal affirmative proposition: All cases of *B*, *C* or *D* are cases of *M*—which expresses a possible causal relation—is eliminated.

Supposing, now, that the phenomenon *A* has not been found present in the absence of *M*, and consequently has not been eliminated, it becomes necessary to apply the method of agreement in order to decide whether *M* is not causally related to a complex phenomenon such as *AB*, *AC* or *AD*, of which *A* is only a part, for the weak point in the method of difference lies in the fact that it can only prove that *A* is at least a part of the cause or effect of *M*, not that it is the whole. We observe by the method of agreement that *B*, *C* and *D* can be simultaneously or successively absent when *M* and *A* are both present. This again eliminates *B*, *C* and *D*, but it also eliminates the possibility that *A* needs to cooperate with *B*, *C* and *D* in order to be causally related to *M*.

We have now proved that *M* is causally related either to *A* or to some phase of *A* which we called *a*. And to secure the elimination of this fourth alternative we use the last and most powerful of the inductive canons, *viz.*, that of concomitant variation. If we find that *M* and *A* vary in perfect concomitance we know that every phase or degree of *A*, rather than some particular phase such as *a*, is causally related to every phase or degree of *M*. If, on the other hand, we had discovered that *A* did not vary with *M* in any manner, we should have proved that the true cause or effect of *M* was *a* and not *A*, as such. Or, again, if we had found that *M* did not vary directly with *A*, but with some function of *A*, we should conclude that the cause or effect of *M* was *A* in conjunction with *a*.

The universal affirmative conclusion of an inductive syllogism is thus in any case the result of successive eliminations—in the form of the particular negative propositions furnished by experience—of all but one of the alternative universals set forth in the disjunctive major premise as hypotheses. And each of the inductive methods is,

we have seen, adapted to the elimination of a certain type of alternative.

And now a word must be said in regard to the two methods which have not been mentioned—the method of residues and the joint method of agreement and difference. The method of residues is confessedly a method of elimination; it is, however, hardly worthy of being placed with the other methods, for it is applicable only when both antecedents and consequents are quantities of matter or energy, and in no other case can we apply the conception of a cause exhaustively to its causality in the production of a given effect. As for the joint method, its continued existence in logical text-books affords a striking illustration (1) of the fact that logicians have failed to recognize the exclusively eliminative nature of induction and (2) of the causes of that failure. The joint method bids us supplement the method of agreement, by the collection of as many different instances as possible of the absence of a phenomenon along with the absence of the supposed cause. Now it can easily be shown that these cases of concurrent absence are as such quite worthless as evidence of causal connection. If we are considering whether a protective tariff causes national prosperity we do not adduce as evidence the generation of hydrogen rays or the constructing of a sonnet, and yet these are difficult cases of the concurrent absence of protection and prosperity as such perfectly conform to the requirements of the joint method as worded by Mill and as symbolized by Jevons. What we really seek to find in such an investigation are always cases in which not merely the supposed cause is absent, but in which *the alternatives to the supposed cause are present* along with the absence of the effect, and hence are eliminated. In the method of difference as usually schematized this is done in a single pair of instances in which *AB* followed by *M* is compared with *BC* followed by the absence of *M*; but it can equally well be done piecemeal or by a succession of instances, one showing simply the presence of *B*, a second the presence of *C*, a third the presence of *D*, etc.; along with the absence of *M*. Now as the so-called joint method is, when rightly understood, nothing whatever but a combination of the method of agreement and the method of difference where each is applied successively in several instances, rather than simultaneously in a single pair, it does not deserve to be classed as a separate canon.²

The claim was made at the beginning of the paper that the identi-

By way of illustration I subjoin (1) the incorrect and meaningless symbolization of the joint method given by Jevons, 'Lessons in Logic,' p. 247; (2) the correct symbolization substantially as given by Aikins, 'The Principles of Logic,' p. 275; (3) the symbolization in a single pair of instances of the

fication of induction with the indirect type of argument, or *reductio ad absurdum*, possessed two advantages, (1) the unification of the inductive methods, (2) the exhibition in a new light of the general epistemological problem of deriving universals from particulars. I have said what I could in regard to the first of these advantages, but I should like in conclusion to speak further as to the second.

The attacks upon the possibility of reasoning from particulars, that have been made by the sceptics on the one hand and by the extreme apriorists on the other, are based in the main upon a quite proper realization of the gulf between a subaltern proposition and its subalternates. The number of cases exemplifying a genuine universal or law of nature is, as we have said, always infinite, and hence the direct inference from some to all is not only uncertain (which would be admitted by inductive logicians), but would seem to be not even probable—to be, in fact, infinitely improbable. For we can, of course, never observe even an appreciable fraction, to say nothing of a majority of the members of an infinite series. Now when we give up this attempt at direct inference and exorcise from inductive theory the specter of a so-called perfect induction as an ideal to be approximated, the whole problem appears in a less paradoxical and more hopeful light. For the experiential evidence in the form of particular propositions, which was worthless as a means of direct proof of the subalternate, is perfectly capable of disproving the contradictory and thus indirectly establishing a hypothesis as a survival of the fittest. Of course this does not mean that we have merely, by the substitution of the intensive for the extensive view of the subject, removed uncertainty from generalizations from experience, but only that from our point of view we may more clearly see why it is that the degree of probability of any inductive conclusion is measured by the number of antecedently possible alternative conclusions and by the ease with which they can be isolated, enumerated and eliminated rather than by the mere number of instances observed.

W. P. MONTAGUE.

COLUMBIA UNIVERSITY.

method of agreement and of the method of difference. The substantial identity of (2) and (3) is obvious.

(1)	(2)	(3)
$ABC - abc$	$ABCD - abcd$	$ABC - abc$
$ADE - ade$	$ABGH - abgh$	$ADE - ade$
$AFG - afg$	$ACGK - acgk$	
$AHK - ahk$		
$PQ - pq$	$BDE - bde$	$ABC - abc$
$RS - rs$	$CDG - cdg$	$BC - bc$
$TV - tv$	$BEF - bef$	
$XT - xt$		

THE FINAL EDITION OF SPENCER'S 'FIRST PRINCIPLES: PART I'

WHEN in 1896 Mr. Spencer had finished the task he laid out for himself in 1860, he set out to do what the more important work of completing his system had hitherto prevented, namely, to revise the earlier parts of the synthetic philosophy. The revised edition of the 'Principles of Biology' appeared in 1898-9, and of the 'First Principles' in 1900. Declining strength and health prevented any further work on the revision.

The changes made in the 'First Principles' are exceedingly numerous, and some of them of considerable importance. Nevertheless but little attention has been paid to them, in spite of the significance of the work and the influence which it has exerted. The present writer has made a complete collation of the fourth edition, 1880, with the sixth, definitive edition of 1900, the alterations introduced in the fifth edition, 1884, being few in number and negligible in character.¹ In this paper the results of the investigation are given so far as they concern the variations in Part I., 'The Unknowable.' The discussion of the variations in Part II. will be given in a later article. Though it has been often regarded as the basis for the acceptance or rejection of Spencer's system as a whole, Part I.,—as Mr. Spencer himself points out, both in the new 'Postscript' to Part I. and in his 'Autobiography,'²—is an unessential part of the synthetic philosophy. This may account in part for the fact that, though it forms obviously the weakest part of the system and has been subjected to the most searching criticism, through all the changes which were made in the 'First Principles' in 1866 and 1875 Part I. received but two trifling verbal alterations. And even in the revised edition of 1900 the importance of the changes made in Part I. is notably less than of those in Part II. This does not imply, however, that Spencer did not make many changes: rather the enormous number of them is the first thing that attracts the attention. There is hardly a paragraph, indeed on some pages not a sentence, that has not been cut into or rearranged. In the vast majority of instances—and the same is true of Part II. as well—the alterations are stylistic. Spencer says in the preface (p. vi), "While the changes of substance in this edition constitute improvements of some significance, the changes of form constitute a greater general im-

¹ For material assistance in the investigation and in the preparation of this paper, the writer is indebted to Professor A. C. Armstrong, of Wesleyan University.

² Vol. II., p. 86.

provement." Altogether the largest number are due to a desire to eliminate redundancies, so that, notwithstanding considerable additions, the size of the 'First Principles' is reduced by fifty pages, of which Part I. loses seventeen. The whole forms a good example of Mr. Spencer's method of literary work as it is described in the 'Autobiography': "So far from disliking the process of polishing as most writers do, I had a partiality for it and can not let any piece of work pass so long as it is possible to improve it."³ And speaking more particularly of the 'Study of Sociology': "Every sentence in the work had passed under my eye for correction five times, and each time there was scarcely a page which did not bear some erasures and marginal notes."

The second class of changes, which, however, Mr. Spencer mentions first in the preface, are those due to advances made in science since the book was first written. An example of these is found in the removal of the argument drawn from philology against the origin of religious ideas before the dispersion of mankind.⁴ Such a negative statement later philology would not attempt; rather it has brought forth arguments to prove that so far as its evidence goes such an origin is possible. Among the rare additions is a foot-note on the subject of Lord Kelvin's hypothesis of vortex-atoms;⁵ this is introduced in connection with the discussion of the incomprehensibility of matter. Kelvin's theory is dismissed, along with those of Newton and Boscovich, as involving elements which 'can not be truly represented in consciousness.' An obvious correction, which should have been made long before, is the suppression of the following sentence, "The influence conveyed through the nerves to the muscles is, though not positively electric, yet a form of force nearly allied to the electric."⁶ Corrections due to scientific changes, however, are naturally much fewer in Part I. than in Part II., since the subject-matter involves fewer scientific illustrations.

A third class of alterations is described in the preface as due to further developments of the author's own thoughts. This class is well illustrated by two substitutions in the section which bases the argument for relativity on Spencer's celebrated definition of life. The sentence, "Divesting this conception of all superfluities and reducing it to its most abstract shape, we see that life is definable as the continuous adjustment of internal relations to external relations," becomes in the sixth edition, "So that passing over its noumenal nature, of which we know nothing, life is definable as the

³ Vol. II., p. 423.

⁴ 4th ed., p. 14.

⁵ 6th ed., p. 40, note.

⁶ 4th ed. 7. 72.

continuous adjustment of internal relations to external relations.'” Similarly, “If, then, life in all its manifestations, inclusive of intelligence in its highest forms, consists in the continuous adjustment of internal relations to external relations, the necessarily relative character of our knowledge becomes obvious,” is changed to, “If, then, life as knowable to us, inclusive of intelligence in its highest forms, consists, etc.”⁸ These changes evidently refer to the doctrine set forth at greater length in a new chapter in the revised edition of the ‘Principles of Biology,’ ‘The Dynamic Element in Life,’ a chapter which has received all too little attention. In this Mr. Spencer acknowledges the inadequacy of his former definition of life as the continuous correspondence between inner and outer relations. It recognizes, he argues, in self-criticism, only the *form*¹⁰ of our conception of life, and that incompletely, while it ignores the *body*¹⁰ of life altogether. The essential element has been neglected in the earlier discussion. When it is said that life consists in the continuous maintenance of relations, the question must be asked, relations between what things? For a relation of which the terms are unspecified gives us no true thought, but only the blank form of thought. Some principle of activity, some dynamic element, must be the substance and essential part of our idea of life. Then, after arguing that life can not be conceived either as a vital principle, a *vis vitae*, or in physicochemical terms, he adopts as the only possible alternative that it is another inexplicable manifestation of the unknown and ultimate reality,—a conclusion that is not only dubious philosophically, but questionable from the scientific standpoint as well.

In connection with the further development of Spencer’s thinking some notice should also be given of the apparent softening of statement which at times accompanies the improvement in diction. References to ‘inexorable logic’ almost disappear, as do many strong adjectives and adverbs, such as ‘absolutely,’ ‘positively,’ ‘rigorously,’ ‘inevitably’ and the like, of which he formerly made abundant use. ‘And this assumption is made by the immense majority of philosophers, past and present,’ becomes more simply,—‘most philosophers.’¹¹ But the illustrative passages are too numerous to cite. The question naturally arises, is this variation in statement accompanied by or indicative of any softening of doctrine, any change of feeling towards religion, for example, or mitigation of his

⁸ 4th ed., p. 84; 6th ed., p. 70.

⁹ 4th ed., p. 85; 6th ed., p. 72.

¹⁰ ‘Principles of Biology,’ 1898, Vol. I., Part I., Chap. VI. A.

¹¹ Original italics.

¹² 4th ed., p. 33; 6th ed., p. 27.

agnosticism? Such a substitution as 'rudest beliefs' for 'grossest superstitions,' perhaps does indicate a calmer attitude towards religion, a modification like that recorded in the pathetic 'Reflections' that close the 'Autobiography.'¹² But any change in his agnosticism, in spite of the fact that nearly one half of the passages containing the words 'Inscrutable Power' or 'the Unknowable' have been expunged from Part I., must be denied. The changes have been made equally on the positive and the negative side of the discussion. The crucial passages in the chapters on the 'Relativity of All Knowledge' and the 'Reconciliation' all remain and are reinforced in the new 'Postscript.' To the question, then, did Spencer moderate his agnosticism, we must give a decidedly negative answer.

The principal addition to Part I., the 'Postscript,' is especially mentioned in the preface as coming under this class of changes. In it Mr. Spencer notices what he terms the two chief criticisms which Part I. has called forth:—that it is illegitimate to assert of the ultimate reality that it is unknown and unknowable, first, 'as putting an arbitrary limit to human faculty,' and second, as involving a contradiction by 'asserting something concerning that of which we are said to know nothing.' The first criticism, it is replied, had already been sufficiently answered in §§ 24 and 25; thinking being relationing, any knowledge of the absolute is excluded, not arbitrarily, but by the very nature of thought. But the second criticism is acknowledged to contain greater difficulties, since it is true 'that saying what a thing is not, is in some measure saying what it is,' as is illustrated in the game of Twenty Questions. So that 'it can not be denied that to affirm of the ultimate reality that it is unknowable is, in a remote way, to assert some knowledge of it, and therefore involves a contradiction.' And yet, it is held that this very contradiction itself shows the impossibility of any knowledge beyond phenomena. Intellect being capable of dealing only with phenomena, involves us in contradictions just as soon as we attempt to use it for anything beyond phenomena. Not only so, but we can not complete any such process of thought, nor even conceive any connection between a noumenon and a phenomenon, for here one of the terms of the relationing which constitutes thought is a blank, and 'such a relation is not truly imaginable.' This last clause deserves to be emphasized. For it shows that Mr. Spencer has never advanced beyond his initial error: he still fails to distinguish between thinking and imaging. Nevertheless, after thus affirming that thought concerning the infinite is impossible, in the next paragraph he argues, "Yet by the very nature of our intelligence we are compelled continually to ascribe the effects we know to some cause

which we do not know,—to regard the manifestations we are conscious of as implying something manifested.” Then he asserts once more that the endeavor to think a relation between appearance and reality, though foiled, implies the existence of such a reality; and complains that his critics have overlooked the distinction he makes. “Their arguments,” he says, “are directed against one or other element in a *conception* which they ascribe to me; forgetting that, equally with them, I deny the possibility of any conception, and affirm only that after all our futile attempts to conceive there remains the indefinable substance of a conception—a consciousness which can not be put into any shape.” Again, a knowledge that is not knowledge at all, but something between that and nescience, is made superior in positiveness and necessity to real knowledge. In fine, the remarkable thing is not the change in the thought of Mr. Spencer, but the absence of change.

But the ‘Postscript’ ends by pointing out the truth which the author saw clearly,¹³ but which has escaped the attention of many of his readers, namely, that the value of Part II. is quite independent of Part I. The latter was written merely with the intention of preventing any misunderstanding of his purpose in the synthetic philosophy, lest any one might think he was propounding a purely materialistic philosophy.¹⁴ Understanding that this is not his intention, the reader is at liberty to reject or adopt so much as he likes of it, without thereby rejecting or adopting the conclusions of Part II. And in this, of course, Spencer is abundantly right.

FRANK C. BECKER.

WESLEYAN UNIVERSITY.

DISCUSSION

FINAL STATEMENTS IN THE DISCUSSION BETWEEN PROFESSOR MINER AND DR. BAIRD

IN the controversy¹ which has arisen between Dr. J. W. Baird and myself over my investigation of ‘A Case of Vision Acquired in Adult Life,’² Dr. Baird has made several statements in his recent reply which, it seems to me, should not be left unanswered.

One of these statements suggests that there may be a misunderstanding among psychologists as to what is normal pitch discrimina-

¹ Cf. above, p. 287.

² Cf. ‘Autobiography,’ II., p. 86.

³ This JOURNAL, Vol. II., p. 692; Vol. III., pp. 45, 101.

⁴ *Monograph Supplement, Psychological Review*, VI., pp. 103-118.

tion. In my paper I said regarding Miss. W.: "Although she has this wide range of tone sensations, we found that her discrimination between simple tones was not unusually keen. With the tuning-forks she distinguished, nine times out of ten, a difference of eight vibrations from the international *a'* (435 vibrations.)" Dr. Baird in his review said: "Other investigators have found that the normal difference for this region of the tonal scale is less than .3 vibration; Dr. Miner confined [?] his tests to a stimulus difference of eight vibrations and naïvely remarks that his patient's discrimination of simple tones was not unusually keen." In my reply to the review, I referred him to the *University of Iowa Studies in Psychology*, II., p. 56, published in 1899, where data were given on 19 women. This group showed an average discrimination of 9 vibrations, a median of 8. In his answer to this reference Dr. Baird said as follows:

"Dr. Miner replies by introducing *new*³ data which *he*³ has obtained from normal subjects, and which he finds to bear witness to the normality of his patient. Why were these data not included in the original paper, to which they properly belong? It is just this failure to present comparative results which has been a chief factor in rendering the publication abortive. Moreover, the fact that the author's determinations of the normal difference limen for tones are twentyfold greater than the normal determinations of the most reliable workers in the field of psychological acoustics shows that there is something radically wrong with Dr. Miner's conditions of practise or of experimentation." I would call attention to the facts that the data were not new, were referred to by page reference, were not obtained by me, and showed that it is possible to make at least a rough comparison with results on normal groups found by other investigators.

As to the literature on pitch discrimination, Spearman⁴ has pointed out the contrast between the records that have been announced by Delezenne, Siebeck,⁵ Preyer, Luft, Meyer, etc., in tests made mainly on themselves, and the norm for groups of individuals published by Cattell and Farrand, Wissler, Seashore, Gilbert, Myers and Spearman. Although the acute and trained ears of the expert investigators of acoustics may attain a discrimination of .3 vibration, such results are not comparable with records on groups of individuals. I tested Miss W. without practise to make the records easily comparable with a general group. Spearman gives a table which he says 'appears to bring the various results of the best

³ Italics mine.

⁴ *American Journal of Psychology*, XV., p. 228 ff.

⁵ For references not given by Spearman, see Titchener's 'Instructors' Manual, Quantitative,' p. 235 ff.

workers into very good harmony with one another and also with my own.' The table suggests that, with a minimum of fore-exercise, non-musicians of general culture discriminate normally 10 vibrations; musicians, 4 vibrations; specially practised reagents, .5 vibration. After fifteen minutes of good fore-exercise, non-musicians of general culture discriminate normally 4 vibrations; musicians, 2 vibrations; specially practised reagents, $\frac{1}{3}$ vibration. Spearman's tests, made with a monochord, with a maximum of fore-exercise, show a median of 3 vibrations for 27 adults, and of 7 vibrations for 24 children (11-13 years). A group test given simultaneously on 83 children (9-13 years) gave a median of 11 vibrations. Myers, using tuning-forks, gives records on 18 adults, without fore-exercise, which show a median of 5 vibrations. The Columbia records, obtained on a monochord, published by Wissler, show an average discrimination for a group of 265 men students, 17 vibrations; 42 women students, 11 vibrations. The above records were for tones near the middle of the scale where the absolute pitch of the standard makes little difference. From the published results we may, therefore, suppose that practise is so important as to make the most available method for comparing an individual with a group to be a test with a minimum of fore-exercise. This was the form of test given Miss W.

As for records taken after the limit of practise has been reached, we have none for a group of any size, so far as I have been able to discover. Titchener, in his quantitative manual for instructors, gives the Cornell laboratory records for his experiment on pitch discrimination to be as follows: "The value of *DL* (absolute) as observed under the described conditions has never exceeded 2 vibrations for either set of forks, and has fallen as low as .75 vibration." But, he says of the laboratory records that they 'represent only a certain stage of psychological training and are intrinsically valueless whether for theory or for practise' (124). Whipple has published records which show the effect of practise on three or four subjects who discriminated poorly at first. None of these records, it seems to me, justify Dr. Baird's claim that 'the normal difference limen for this region of the tonal scale is, after preliminary practise, considerably less than one vibration.' What the norm for a group might be, after the limit of practise, has not yet been determined. Without practise, we are sure that it is considerably above one vibration.

Dr. Baird refers to the literature to corroborate another contention. He admits that he should have used the word 'cataracts' instead of describing the patient as 'a young lady who had a cataract removed'; yet he believes that he was justified in the use of the singular when she had two removed. He says: "If Dr. Miner will consult the literature he will find that I have abundant authority

for the form of expression which I employed. Would he maintain that Ware, Franz and other writers of equal prominence have persistently 'misrepresented' the condition of their patients? In re-reading the reports of Ware and Franz⁶ I find that Ware does mention *the operation* as an operation for 'the cataract.' But, if I read aright, neither Ware nor Franz describes '*the condition of his patient*' as having 'a cataract.' On the contrary, they use 'cataracts' or 'cataract of both eyes' when telling about their patients. Moreover, it is to be noted that these cases bring out the importance of the distinction which Dr. Baird neglected in his description of Miss W. The patient mentioned in the title of each of these English reports was successfully operated on for cataract in only one eye. Miss W. had a complete congenital cataract removed from each eye.

I regret that Dr. Baird and I did not use 'keenness' of vision with the same meaning. It has led to his making the unpleasant charge that I criticized him for an omission he did not make. I called attention to the fact that, among other important omissions, he completely overlooked the summarized conclusion that 'color vision was abnormally keen.' His sole reference to color vision in his review was to mention that the patient's 'spectrum is about one fifth longer than the average of ten students.' By keenness of color vision, I referred to color *discrimination*. This was stated at the conclusion of my paper as follows: "Color vision is so far above normal as to contradict any supposition that twenty-two years of disuse would cause degeneracy. On the contrary, either the color process deteriorates with use or the removal of the lens and unusual interest produce a remarkable ability to discriminate colors."

Something must have been wrong with my presentation of the facts or Dr. Baird would not have discussed, as a test for measuring the perception of depth, an experiment which was to determine whether Miss W. was actually able to use both eyes together. From the medical standpoint, it was important to know whether an adult could really attain single binocular vision. Such an experiment was largely qualitative in its nature. In the middle of a paragraph where I was discussing this subject of single binocular vision, Dr. Baird found my statement about a test to compare the subject's single and binocular vision. Because I said 'her accuracy doubled' when she used both eyes in judging the relative distance of two balls, he was led to suppose that I was interested in measuring her perception of depth. My form of expression was employed to emphasize that she was actually using a different method, and not merely neglecting the image on one retina, when she thought she was using both eyes. While the detailed description of the test, which is yet to be

⁶"Transactions of the Royal Society," 1801, 1841.

published, might justify the test as one for the perception of depth, such a test was not planned. It would give no basis for comparison with a normal group, unless it could be supplemented by an extended investigation of the secondary factors which Dr. Baird mentions. From the fact that the subject had no lens in either eye and used spectacles, such an inquiry was wholly beyond the scope of what I could expect to do. The problem whether or not she could use both eyes together in judging distance was the important general question to be determined.

While I am still struggling with the practical question whether I shall be able to make further tests on Miss W., and whether the promise of other results makes further experiments advisable, Dr. Baird seeks to pierce me with one or the other horn of a logical dilemma—"Was the patient available for additional experiments or was she not?" When the experiments began, I thought she would be available for three days, then for a week, then for a longer time. Unfortunately, I am not very sure yet what the answer to his question is, except that it is not unconditional. I published the preliminary report, hoping that it would call forth suggestions from those whose special work might be definitely reached by this case. Dr. Baird has given me the suggestion that I test her limen for pressure and also for twoness, which I postponed for practical reasons. I now hope to have Miss W. at the university for a few days the first of May, and I shall be glad to receive any other suggestions before that time.

In the conduct of my investigation, the effect of the disuse of sight on the subject's other senses was a wholly subordinate matter. Only *one page* of my report was devoted to tests on other senses than sight. My effort was directed to the study of the subject's vision and her learning process. In the discussion in this JOURNAL, altogether too much emphasis has been placed on tests of hearing and touch. Dr. Baird, in his review, mentions that these were 'incidental,' yet he devoted to them about one half of his page-review of the paper. He did this, no doubt, because he felt that the tests, or the description of them, needed criticism. Whether, in general, the loss of sight is compensated by increased capacity in other senses is an interesting question on which the case has a bearing. Where Miss W. might rank with a normal group would be, however, only an introduction to the problem of how a group of blind people would compare with a group having sight. Through the discussion of the incidental problem of compensation, Miss W.'s eyesight has been left in the background, although it is of vastly more importance in this case. In my report I tried to emphasize certain rather surprising results in the field of sight, such as the reversal of irradiation, the

patient's remarkable color vision, the absence of retinal rivalry, the unexpected attainment of single binocular vision by an adult, the development of the perception of number, etc. The main subject of the investigation was necessarily the acquisition of *vision*.

In his review Dr. Baird severely criticized the incompleteness of my investigation and the absence of normal records for comparison; but he gave the reader no intimation that my paper was declared to be 'a brief preliminary report.' Moreover, I stated in it that 'before the more complete technical description of the experiments and the quantitative results are published, it is desirable that the tests should be repeated on a representative group of normal adults.' Because of the bad impression this omission from his review would create, I believe it was misleading. Because he used the absence of *systematic* experiments in passive touch as an illustration of 'haphazard and inaccurate' tests, I suggest that he further confused incompleteness with lack of thoroughness. Because he said that the results of a test on active touch were 'unmeaning' when normal records for comparison were not given in the paper, I question his criticism. Because he compared the pitch record of Miss W. with that of long-practised experts, I take the opportunity of correcting a possible misconception about normal pitch discrimination. Because he supposed that I tried to quantitatively determine the subject's perception of depth when I was studying whether she acquired single vision with two eyes, I defend myself. Because he misrepresented by describing the patient as having 'a cataract removed,' I corrected him. Because the problem of compensation has become over-emphasized, I plead for a reading of the report, where that problem is subordinate. I have not claimed and do not believe that any misrepresentation has been intentional. So far as Dr. Baird was misguided by the way in which I presented my results, I am willing to take the blame. I am mainly concerned, however, that his criticism should not prevent attention to this rare case. I feel that it has several important features which have not previously been studied after successful operations for complete congenital cataracts.

JAMES BURT MINER.

THE STATE UNIVERSITY OF IOWA.

WHEN a discussion has reached a certain stage, the main issues, which were clear-cut and definite at the outset, tend to become diffuse and obscure as a result of the controversial attitude assumed on both sides. I can not but feel that this stage has been reached in the present discussion. I shall endeavor, in my reply, to confine myself to points originally in dispute between

Dr. Miner and myself. And I shall take up these points in the order followed in the closing paragraph of the foregoing rejoinder.

1. Dr. Miner's first point,—which refers to the preliminary character of his paper,—has already been met.¹

2. The review pointed out in detail that Dr. Miner's work was *neither thorough nor complete*. This criticism was not based upon a single group of experiments, as the rejoinder implies; the review specified some six other groups of experiments which were vitiated by the same defects.

3. Dr. Miner's report of his 'test on active touch' gives no insight into the degree of sensitivity possessed by his patient. The results of this test, as reported by the author, are, therefore, unmeaning.

4. It need scarcely be mentioned that practise tends to refine sensory function. No measurement of sensory capacity can have value unless the conditions of practise are specified. In describing his test in tonal discrimination, Dr. Miner made not the slightest reference to the degree or character of practise attained by his subject at the time when the test was made. His description leaves the reader wholly in doubt as to what was the degree of sensitivity possessed by his subject.²

5. Apropos of color discrimination, as Dr. Miner here confesses to an inaccuracy of phrasing, I can only regret a misunderstanding for which I am not in the least responsible.

6. The question of 'cataract' or 'cataracts' is a merely verbal issue. There is abundant authority in Ware and in Franz for the

¹ See this JOURNAL, Vol. III., No. 4, p. 101.

² The reader may be reminded that it comes to light only in Dr. Miner's second rejoinder that this test was made 'without practise' and 'with a minimum of fore-exercise.' That such initial records can not be regarded as furnishing a measure of discrimination is well illustrated by Professor Whipple's records, now referred to by Dr. Miner himself. As to the experimental data which he here brings into comparison, I need only call attention to the wide divergence of their conditions. Spearman and Myers deliberately planned to exclude, so far as possible, the influence of memory, in order that they might obtain a measurement of the purely sensory limen. The standard and the comparative tones were both sounded by the experimenter; the time interval between the two tones was reduced to a minimum,—two seconds in the one case, three quarters of a second in the other. Wissler had a wholly different problem, and he attacked it by a wholly different method. Here the standard tone was sounded, and then the instrument was mistuned and given into the hands of the subject, who was required to retune it to unison with the standard tone. Wissler himself says of his method: "The test for pitch is in many respects a test of memory" (*loc. cit.*, p. 33). I regret that in my former 'Reply' I ascribed to Dr. Miner certain results obtained in the Iowa laboratory *before* the publication of his paper. This was a mistake. But I must insist that it does not in the least affect the questions at issue.

form of expression which I employed; and the context in which I employed the term is neither equivocal nor misleading.*

7. As regards Dr. Miner's experiments in the visual perception of depth, the original paper stated that 'accurate tests were made upon her ability to discriminate distances with both eyes, compared with her monocular ability' (p. 114). And the results of these tests were expressed in quantitative terms, the liminal determinations being 6 cm. in the former case and 15 cm. in the latter. The author now points out that I was mistaken in supposing that he 'was interested in measuring her perception of depth'!

I quite agree with Dr. Miner's statement that a great deal of interest attaches to this case of acquired vision, and I have already pointed out that the investigation of such cases may throw light upon psychological problems. It is true that, in the present instance, upwards of three years elapsed between the date of the operation for cataract and the beginning of the examination of the patient. Yet it can not be doubted that the psychologist is in need of enlightenment upon just the topic which Dr. Miner chose for investigation.

J. W. BAIRD.

JOHNS HOPKINS UNIVERSITY.

WHILE I shall not prolong this controversy by meeting Dr. Baird's last statements, I would give the following references: In regard to Dr. Baird's second point, see this JOURNAL, Volume III., p. 46, line 26; and as to point '3,' see my original paper in the *Monograph Supplement, Psychological Review*, Volume VI., p. 108.

JAMES BURT MINER.

* In the sentence next succeeding the one in which Dr. Miner finds the objectionable expression, I twice referred to his patient as a 'blind person.' And I afterwards spoke of her as a 'born-blind' patient. In describing the experiments in which she acted as subject, I referred to her 'capacity to discriminate distance with both eyes' and spoke of her converging 'both eyes' upon the visual object. I pointed out that her binocular estimation was more than twice as accurate as her monocular estimation. I spoke of the fact that her two retinal images did not fuse into a single image (in the earlier experiments), and I stated that 'each retinal image persisted independently of the other and her visual objects appeared in duplicate.' Could the most obtuse reader understand from my review that Miss W. was blind in but a single eye before the operation, or that she saw with but a single eye after the operation? Wherein then have I 'misrepresented' the condition of his patient?

REVIEWS AND ABSTRACTS OF LITERATURE

I presupposti filosofici della nozione del diritto. GEORGIO DEL VECCHIO.

Bologna: Ditta Nicola Zanichelli. 1905. Pp. 188.

Das Naturrecht und der Entwicklungsgedanke. GUGLIELMO SALVADORI.

Leipzig: Theodor Weicher. 1905. Pp. viii + 108.

Owing, no doubt, to the continuity in political and social conditions, the theory of right is in Germany and Italy perhaps the topic in philosophy most seriously cultivated. Nevertheless the lack of agreement on fundamental points has caused the phrase 'the crisis in the philosophy of right' to become almost a technical term. According to Del Vecchio, and the host of writers cited by him, the confusion centers about the question, 'What is right?' Gierke ('*Naturrecht und Deutsches Recht*') puts it thus: "Am Eingange und am Ausgange der Rechtswissenschaft steht begrifflicherweise die Frage 'Was ist das Recht?' Der Rechtswissenschaft geht es nicht besser und nicht schlechter als ihren meisten Schwestern: in vielhundertjährigen Bemühen ist es ihr nicht gelungen eine endgültige und einwandfreie Antwort auf diese Frage zu finden, von deren Lösung doch für sie das Verständniss ihrer selbst abhängt. Nicht einmal zu einer allgemein anerkannten äusserlichen Definition, mit deren Hülfe die sichere Abgrenzung des Rechtsgebiets gegen andere Gebiete des menschlichen Gemeinlebens nach formellen Merkmalen möglich wäre hat sie es gebracht." Signor Del Vecchio will accordingly undertake to point the way out of the labyrinth for which the positive and empirical historical school is apparently chiefly responsible. Whether or not he succeeds depends upon whether the Kantian philosophy still has power to convince.

If we look to history to discover the nature of right, she exhibits a multitude of different and contradictory standards. Herodotos observed that every people upholds its own laws as the best ones; and this diversity of ideals has been an object of curious speculation ever since. It was a large item in the evidence appealed to by the Greek sophists and skeptics, and its recognition is a point of departure for perhaps every *Aufklärung*. Its first effect is in the direction of enlightened liberalism or skepticism, as seen in Montaigne and Pascal. Skepticism, however, does not dispose of the problem, but rather emphasizes it.

Accordingly this instability of notions of right led in antiquity to attempts to conceive a stable and authoritative criterion of justice, superior to the various systems of particular peoples, a criterion, namely, defined from the point of view of nature. The application of such a criterion would yield a system of 'natural' justice. But such a system is just one more system of right and adds itself to the already existing group. It neither overcomes the diversity which underlies the problem nor sums up the whole of right within itself. Hence the author concludes that the problem of 'natural right,' which is at present in his own country an object of such lively discussion, has nothing to do with the problem of his own present inquiry.

A doctrine closely related to that of 'natural justice' proceeds by distinguishing constant and variable elements. The purpose is really to give content to the idea of 'natural right.' Thus Aristotle distinguished what is *φύσει δίκαιον* from what is *νόμῳ* or *θέσει δίκαιον*. Those elements in the concept of justice which are derived from nature are common to the laws of all states. The criterion of empirical universality was the foundation of the Roman conception of *jus gentium*. But so far as the notion of natural right is made to depend upon a *consensus gentium*, its character of independent authority is denied. Moreover, an adequate concept of right must do justice to all of its object and not merely to the invariable part of it.

The philosophy of history has sought to systematize the diverse standards by exhibiting them as stages in an evolutionary journey which every nation is obliged to accomplish. The facts refuse, however, to follow one another in the ways that such theories demand. The theories are indeed grand imaginative constructions, but where there is gain of theoretical precision there is loss of truth.

More promising is the attempt to explain right by examining the relation it bears to its physical and social environment. This is the characteristically modern point of view, and here the influence of the more concrete evolutionary conceptions has been valuable, as well as the historical habit of mind cultivated by the Hegelian school, and the methods of historical positivism. In proportion, however, as this undertaking meets with success, the essence of the concept of right seems to be lost. Thus a survey of history gives us not right, but rights, and the author complains that modern speculation labors not so much to discover the 'pure substance' of the concept as its history and function. The reader wonders from the beginning why Signor Del Vecchio never thinks, apparently, of defining right in terms of function. He never once asks what right *does*, but always what it *is*. It is a little hard to feel the reality of his problem. Apparently the nature of right exists in imperatives of a certain type. The concept of right must, then, be a 'thou shalt' something; but what is it that 'thou shalt'? It is impossible to discover any one imperative which shall explain the particular actual imperatives as the universal explains the particular. But the formal concept of right, whatever content it may have, is logically prior to all concrete manifestations of it, and can not be understood from them. It is, therefore, a category of reason, making 'juridical experience' (p. 132) possible. Nevertheless, the idea of right is not a constructive spontaneity (*una potestà attiva, una gestaltende macht*, p. 181). How, then, it can be effective in the way demanded, the author will perhaps make clear in his next work. In this one he certainly oscillates between formal logic and Kantian epistemology. Yet to be quite fair, we must note that the title announces not a study of the concept of right, but of its 'philosophical presuppositions.'

Dr. Guglielmo Salvadori is more consistent. He criticizes the historical school in the same spirit and from the same point of view as Del Vecchio. He discusses the 'crisis' in the philosophy of right, and he

accounts for the same with a theory that is probably better than a brief review can make it appear. In the world of intellectual constructions there is an oscillation between a relatively Eleatic and a relatively Heracleitean position. The history of empiricism and positivism, since the days of great philosophical systems, has been a movement away from the interest in eternal principles toward an interest in the flux of empirical facts. In this flux of the matter of right the form of right has almost disappeared. It is accordingly high time to reassert the claims of the Eleatic position, in the definition of which a real philosophy of right must consist.

The weak side of the historical school has appeared in its lack of psychological insight. To say this is not to question the immense service rendered by the historical school. Dr. Salvadori does not wish to complain because historians stick faithfully to their own business. He does insist, however, that a philosophy of right must rest upon something which the historian, as such, is unable to supply. Right exists in the experience of individuals, as a factor in psychical human nature, and finds expression in will-activities. Psychology must accordingly ally itself with history in order to seek in human nature the real source of all ethical phenomena. This appeal to the science which studies the psychical individual is justified by the history of right which describes the primitive conception of right as a communistic consciousness, and the most developed conceptions as involving self-conscious individuality. And since man is not merely a psychical and a social, but a biological organism as well, biological science must come to reinforce history, psychology and sociology. All the time, however, the contrast between form and matter is evident, and while all the sciences of man contribute to the explanation of particular rights, the essence of right can be understood only as the operation of a mental spontaneity, as a typical activity of the 'schöpferischen Vernunft.'

By thus grounding the form of right in human nature, the basis is secured for a legitimate concept of natural right. This, however, does not give the form of right or state its essence. In order to arrive at a statement of the concept of natural right it is necessary to describe an ideal society, not by any *a priori* procedure, but by empirical observation. Such an ideal society is a community in which every member is in full possession of all the rights which issue from the principle of justice because these are the necessary presuppositions for every social advance. They constitute the freedom that must be guaranteed to the human individual in order that he may realize his highest ethical purposes; they are the right to freedom, the right to dignity and the right to complete individual development.

WENDELL T. BUSH.

COLUMBIA UNIVERSITY.

The Principles of Descartes's Philosophy. BENEDICTUS DE SPINOZA. The philosopher's earliest work, translated from the Latin, with an introduction by Halbert Hains Britan, Ph.D. Chicago: The Open Court Publishing Co. 1905. Pp. lxxxi + 177.

This work of Spinoza's contains (1) an attempt to demonstrate certain portions of Descartes's '*Principia Philosophiæ*' (not 'the principles of Descartes's philosophy,' as the translator puts it) *more geometrico*, and (2) an appendix containing certain '*Cogitata Metaphysica*' of Spinoza's. It is prefaced by a lively and illuminating letter to the reader from Ludwig Meyer, to whom Spinoza had entrusted the work of publication. The first 'Part' of the main work is concerned with God, and the second with space, matter and motion; the third is a mere fragment. The sixty-two pages of '*Cogitata Metaphysica*' contain a preliminary discussion of such subjects as being, essence, existence, necessity and eternity, a series of short chapters on the attributes of God, and a few pages at the end on immortality and the freedom of the will.

In these '*Cogitata*' the geometrical method is dropped, but the topics are those of the ethic, and the question we naturally ask is, How far do they express Spinoza's own thought at the time and how far are they mere attempts to interpret Descartes? That Spinoza himself did not regard them as satisfactory expressions of his own thought is evident enough from his explicit statement that he holds 'the exact contrary to much that is there written,' for example, to the doctrine of the freedom of the will, and that the treatise is published in the hope that 'some of those who hold the foremost positions in my country will be found desirous of seeing the rest of my writings, which I acknowledge to be my own,' and make it possible to publish them without breaking the law. What these other writings were Dr. Britan does not tell us.

So much for Spinoza. Dr. Britan's introduction to the translation covers some eighty pages, and would have been much improved if he had condensed it into eight or ten. As to the translation itself, it is extremely slipshod, even where we have the right to expect the most painstaking care. Thus we find this definition at the beginning of Part I:

"VII. Substance, which is the immediate subject of extension, and of accidents, which presupposes forms of extension as figure, position and motion, etc., is called body (*corpus*).” This is hard to understand; but it would have been clear enough if the translator had not inserted a comma after 'accidents,' and had left 'presuppose' in the plural. The Latin reads, '*extensionis, et accidentium quæ extensionem præsupponent.*'

So with Definition IX. "When we say that something is contained in the nature of the thing itself or in its concept, it is the same as to affirm that this is true." But true of what? The Latin reads, '*idem est, ac si diceremus, id de ea re verum esse, sive de ipsa posse vere affirmari.*'

Once more, in the discussion of Zeno's argument against motion (p. 73) we read: "For if you reply that a body does not move *in* the place it is, but *from* that place to another, he will ask whether it does not also

move through the intervening places. We reply by making a distinction—if through the term *was* we understand *to be at rest*, then we deny that the body was at any of the places through which it moved: but if by *was* existence is meant, then we say," etc. But where is this ambiguous term '*was*' on which the whole point depends? It ought to be in the clause which reads, 'whether it does not also move through the intervening places' (rogabit: An in locis intermediis non fuit?).

These are rather extreme examples, to be sure, but they do not give an unfair impression of the general character of the translation.

Some authors might be translated in this free and easy way without serious harm, but with Spinoza every word tells, and it is a pity that the translation should be less clean-cut and unambiguous than the original.

H. AUSTIN AIKINS.

WESTERN RESERVE UNIVERSITY.

A Reconciliation between Structural and Functional Psychology. MARY WHITON CALKINS. *The Psychological Review*, March, 1906. Pp. 61-81.

Professor Calkins's article is the presidential address at the Cambridge meeting of the American Psychological Association. It includes (1) a defense of the 'conscious self as basal fact in psychology,' (2) a reconciliation, through the offices of this self, of structural and functional psychology and (3) a description of consciousness in terms of structure and of personal relation. The object of the paper is 'to show that the two conceptions, structural and functional, are readily combined if only the basal fact of psychology be conceived as a conscious self, that is, as a self-being-conscious.' The possibility of the 'combination' or 'reconciliation' or 'harmony' of the two conceptions lies in the alleged fact that 'a self-being-conscious is not only analyzable into elements, but is also a complex of relations to its environment, social and physical.'

The most noteworthy feature in the address is the new position taken by the author with regard to the doctrine of 'selves.' In earlier expositions, the 'psychology of selves' has been made coordinate with 'structural' or 'process' psychology. Any mental experience whatsoever, it has been urged, may be treated either as an idea or event 'without any reference at all to any self,' or as an experience of a 'self' or 'ego.' Now, however, Miss Calkins declares that 'in spite of the abstract possibility of conceiving consciousness as a series of ideas and psychology as the science of this stream of ideas, I am none the less convinced that not the idea, but the self, should be taken as the basal fact of psychology.' This conviction is defended in two ways: (1) 'the idea is itself an abstraction which invariably implies a self' and (2) no description in terms of process gives 'a full and adequate account of actual conscious experience.' These defects of process psychology may be eliminated by sub-

¹ Cf. 'An Introduction to Psychology,' 1901, pp. v, 12, 149 ff.; also, 'Der doppelte Standpunkt in der Psychologie,' 1905.

suming both structural and functional under self psychology. The author is careful to repeat that by 'self as fundamental fact of psychology' she means neither the psychophysical organism nor the philosophical or sociological self, but the 'psychological self'—'an object of immediate experience.' Thus conceived, the self is the instrument of the promised reconciliation. The argument runs as follows: First, self psychology is structural psychology because it employs the method of analysis into elements, which is the essential feature of structural psychology. Secondly, self psychology is functional psychology because it regards and sets a value to the experienced relations of self to environment. To be sure, functional psychology, in so far as it forms an alliance with biology, alienates itself from the more generic form; but, in so far as it remains true to its 'cardinal conception,' that of 'consciousness as involving internal relation to environment,' it falls naturally under self psychology, and the reconciliation is complete. "Consciousness, which always implies a conscious self, is a complex alike of structural elements and of relations of self to environment."

It is, perhaps, captious to suggest that, in the proposed settlement of differences, the arbiter rather absorbs than 'reconciles' the disputants. Assuming, however, that the latter were willing to be devoured in the interests of harmony, it would behoove outsiders to rest content were it not that the quarrel—if quarrel there really be—is far more a matter of psychologists than of psychologies. The dispute, so far as dispute exists, springs more from temperamental diversity and from disparity of interest than from any incompatibility of structure and function. Practically all psychologists would, I believe, if the distinction in question became general, acknowledge the validity and value, under some form, of both procedures. What is of primary importance is not that the differences of structure and function should be moderated by a *tertium quid*, but that the investigator should know when he is dealing directly with consciousness itself and when with relationships, dependencies and functions, and that he should be able, in either case, to use appropriate instruments and methods.

To revert to the 'reconciliation' itself, it may fairly be asked whether the assumption of a 'self' serves to establish more than a formal harmony of the alleged differences. Is it not as simple and as natural to regard conscious experience from both points of view under discussion, but without reference to the self? Moreover, can the self, once discovered and admitted, as 'basal fact,' into psychology, be made to stand in any *vital* relation to both structure and function? The relationship with the former is not unlike that of foster-parentage. Structural analysis has not, as a matter of fact, usually been regarded as analysis of the 'self,' nor does the method depend for its existence upon the 'self.' At most (as the argument of the address concedes) the self is only supplementary: it can adopt and protect and improve, but it can not originate. To functional psychology, on the other hand, the psychology of selves stands in a much more intimate relation. The parentage in this case is real. Indeed.

we may pass beyond the figure of generation and say that self psychology is a *species* of functional psychology. But we must not confuse the species with the genus. There is also the psychophysical kind, which, however much its 'biological excrescences' need 'pruning,' is to be reckoned with. Then there is the function that springs, independently of the 'self,' from the mental process as such or from the organized group of processes. Again, function may imply not conscious relation of self to self, but 'transcendence' in general or, finally, the reaction of consciousness upon itself (a kind of function common, *e. g.*, in the writings of Stout and Lipps). These types of function are, in all probability, not all coordinate, and the list lays no claim to finality, but the very fact that the word 'functional' is employed in psychology in so many different senses should serve as a warning against hasty generalizations regarding the use of the term.

Despite the author's intentions, the address seems, then, to the present writer, strongly to indicate that self psychology is essentially a type of the psychology of function; that it is, therefore, as in the earlier expositions it appeared to be, *coordinate with* and not inclusive of structural psychology. Thus regarded, it is, without doubt, in a position to perform—or, better, to complete—an important and timely service for psychology, namely, to supply a systematic and *psychological* account of the functions and relationships of the conscious individual.

I. MADISON BENTLEY.

CORNELL UNIVERSITY.

JOURNALS AND NEW BOOKS

AMERICAN JOURNAL OF PSYCHOLOGY. January, 1906, Vol. XVII., No. 1. *The Psychology of the Simple Arithmetical Processes: A Study of Certain Habits of Attention and Association* (pp. 1-37): CHARLES E. BROWNE.—Attention is involved in the data and the result of a problem, association in the process of solving it. In addition and subtraction the association is less rapid and direct, and is generally accompanied by a tendency to articulation on account of the derivation of these processes from simple counting. In multiplication and division the association is more rapid and direct, the tendency to articulation disappears, and the result is accompanied by a sense of accuracy. Pedagogical inferences. *The Time of Some Mental Processes in the Retardation and Excitement of Insanity* (pp. 38-68): SHEPHERD IVORY FRANZ.—Experiments made on normal, depressed and excited subjects by taking their time for certain simple processes show that in the maniacal condition there is no increase of motor ability, but simply a diffusion of the motor impulse, and that in the depressed condition the retardation takes place in the peripheral organs rather than in the central. *Acquisition of Written Language by Primitive Peoples* (pp. 69-80): ALEXANDER F. CHAMBERLAIN.—The various attempts made by white men and by Indians

to reduce the different Indian languages to writing are interesting in themselves and valuable for the light they may throw upon the general problems of reading and writing. Bibliography. *An Experimental Examination of the Phenomena usually Attributed to Fluctuations of Attention* (pp. 81-120): C. E. FERREE. - A long series of careful experiments show that the changes in the intensity of the visual field commonly attributed to fluctuations of attention are in reality due to interruptions in adaptation caused by eye movements. *A Comparison of Methods for the Determinations of Ideational Type* (pp. 121-126): ALMA BELL and LORETTA MUCKENHAUPT. - The different methods used agree, on the whole, in their results, though the deviations seem to point to imperfections in some or all of the methods. *The Kinesthetic Element in Endophasia and Auditory Hallucination* (pp. 127-133): CLARA HARRISON TOWN. - The view that thinking is carried on mostly by the aid of auditory and motor images, *i. e.*, is a sort of an internal speech, is confirmed by some cases of insanity, in which the internal thinking becomes external and hallucinatory. *The Negative Aspect of Hallucinations* (pp. 134-136): CLARA HARRISON TOWN. - On account of the negative aspect of hallucinations—their power to inhibit sensations from the periphery—Dr. Stoddard explained them as due to a dissociation of the sensory centers from the sense organs, but since the author found cases of hallucination lacking the negative aspect she regards them as due rather to a concentration and diminution of attention. *New Books. Notes and News: The Annual Meeting of the American Psychological Association.*

ANNALEN DER NATURPHILOSOPHIE. December, 1905, Band V., Heft 1. *Grundzüge des modernen Seelenlebens in Deutschland* (pp. 1-50): K. LAMPRECHT. - From 1500 to 1800 A.D., individualism, having expelled the medieval view of man as a mere member of a genus, glorified understanding at the expense of the unifying influence of affection and imagination. Its two stages and its workings in many fields. The development of subjectivism: new emotions arise from introspection, the love of nature, morbidity; psychology arises and free personality is achieved, finding in itself the source of objective laws and seeking, in sports and dilettantism, activities beyond those of mere necessity. Kant's criticism of the mechanical conception and Darwin's demonstration of the mutability of species alike magnify personality because they emphasize life. Tolerance, democracy and cosmopolitanism, are based on the one spirit of subjectivism. *Ueber Harmonie im Weltraum* (pp. 51-110): V. GOLDSCHMIDT. - The distances of the planets from the sun result from the properties of a condensing ball of gas, and also follow the 'law of complication,' which prevails also in vibrating chords, in all tonal harmonics and in the development of colors and crystals, and sense and thought. So, also, the sizes of the planets follow this law, as do the satellites in their relations to their planets. *Die zwei Hauptprobleme der Wirtschaftswissenschaft* (pp. 111-118) J. ŽMAVE. - The problems are those of value and of labor, of which the latter is altogether fundamental. *Die Erkennt-*

niskritische Betrachtungsweise in der Biologie unserer Zeit (pp. 119-133): P. OPPENHEIM. - The problem of all naturalistic speculation is the explanation of some *dualism*; in biology the monistic reality can only be explained dualistically, whether we regard the dualism of reality and the way in which it is experienced, or that of the modes of observation, of which the author distinguishes four. *Neue Bücher* (pp. 134-136): H. DINGER, *Dramaturgie als Wissenschaft*. - W. O.

Abraham and Langevin. *Les Quantités élémentaires d'Électricité; Ions, Électrons, Corpuscles*. Mémoires réunis. Two volumes. Paris: Gauthier-Villars et Fils. 1905. Pp. xvi + 1138. 35 fr.

Bolin, Wilhelm. *Pierre Bayle, sein Leben und seine Schriften*. Stuttgart: Frommann. 1905. Pp. 111. 2 M.

Bonucci, Alessandro. *La derogabilità del diritto naturale nella scolastica*. Perugia: Vincenzo Bartelli. 1906. Pp. 292.

D'Alfonso, N. R. *I limiti dell'esperimento nella psicologia*. Rome: Loescher and Co. 1905. Pp. 21.

Freytag, W. *Entwicklung der griechischen Erkenntnistheorie bis Aristoteles, in ihren Grundrügen dargestellt*. Halle a/S: Max Neimeyer. 1905. Pp. iv + 126.

Jastrow, Joseph. *The Subconscious*. Boston and New York: Houghton, Mifflin and Co. 1906. Pp. ix + 549. \$2.50.

Kuberka, Felix. *Kants Lehre von der Sinnlichkeit*. Gekrönte Preisschrift der Krug-Stiftung der Univ. Halle-Wittenberg. Halle a/S: Kaemmerer und Co. 1905. Pp. viii + 146. 2 M.

NOTES AND NEWS

DR. WILLIAM TURNER, a former professor at the St. Paul Seminary and at present in charge of St. Luke's parish in St. Paul during the absence of Rev. Ambrose McNulty, has been appointed professor of philosophy at the Catholic University of Washington, D. C., and he will begin his new duties on October 1. Dr. Turner was born in Limerick, Ireland. He was a student at the Jesuit college of his native city, and at the age of seventeen he was graduated from the Royal University, in Dublin, taking second honors in philosophy. He went to Rome, and while pursuing his theological course also studied philosophy, and was awarded the Benemerenti medal, given for special elections in philosophy. He next went to Paris and studied at the Sorbonne until 1894, when he went to St. Paul, and for ten years was professor of philosophy in St. Paul's Seminary. Dr. Turner is the author of the well-known 'History of Philosophy.'

THE following is from *Nature*, April 19: "Sir Thomas Browne, the author of 'Religio Medici,' who lived at Norwich in the middle of the seventeenth century, was buried in the church of St. Peter Mancroft

during the early part of the last century. It is believed that his skull was abstracted from the grave and is now preserved at the Norfolk and Norwich Hospital. We learn from the *Times* that recently there has been a considerable expression of opinion in Norwich that the skull ought to be returned to the tomb whence it was taken. The hospital governors on Saturday unanimously passed a resolution agreeing to this course, on condition that the tomb shall be opened in the presence of representatives of the hospital with the view of satisfying them that the remains therein are without a skull."

It is proposed to erect a memorial to the late Mr. Frederic W. H. Myers in the chapel of Cheltenham College, his old school. Mr. Waterfield writes, "The memorial will take the form of a wall picture in an arched recess surmounting some emblematic wood-carving, the whole designed to illustrate the Resurrection and the Doctrine of Immortality, which, during the best years of his life, Mr. Myers strove so earnestly to make more real to his fellow men." Contributions may be sent to Mr. F. J. Cape, The College, Cheltenham.

In a paper read by Baron de Haulleville before the Colonial Club, of Antwerp, on the religions of the natives of the Congo, the writer declared that for the negroes water represents all that is mysterious, just as fire does to the eastern imagination. Tizambi, the supreme being, lives below the waters and cares nothing about the welfare of his followers. The negroes feel confirmed in their belief in the mysterious power of water by the fact that white men came to them across the ocean and up the Congo.

THE Cambridge University Press has in preparation 'The Axioms of Geometry,' by Dr. A. N. Whitehead. Swan-Sonnenschein and Co. promise 'Thoughts and Things—A Genetic Study of Logical Process,' in two volumes, by Professor J. Mark Baldwin, Vol. I, 'Theory of Knowledge, Functional Logic,' Vol. II, 'Theory of Reality, Real Logic.'

THE Ravizza prize of two thousand five hundred francs is offered for the best study of 'The Psychology of the Normal and of the Abnormal Child in Relation to Education.' As Italians only are admitted to the competition, we do not publish the conditions.

At the last meeting of the French Institute ten thousand francs (from the Prix Debrousse of thirty thousand francs) was devoted to publishing the works of Leibniz.

PROFESSOR FRANK THILLY, professor of philosophy in Princeton University, has been made professor of philosophy in the Sage School of Philosophy of Cornell University, succeeding Professor E. B. McGilvary, who was last year called to the University of Wisconsin.

PROFESSOR WILHELM OSTWALD, of Leipzig, has been elected a foreign member of the Danish Academy of Sciences. According to the *New York Times*, he has resigned the professorship of chemistry at the University of Leipzig and will establish a private laboratory.

DR. B. H. BODE has been appointed assistant professor in philosophy at the University of Wisconsin.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

THE GROUND OF THE VALIDITY OF KNOWLEDGE¹

III. THE TRANSCENDENCE OF KNOWLEDGE AND THE CORRECTNESS OF DATA

AT the close of my last paper it was possible, after having up to that point used the term 'experience' to denote those conscious events, adjustments, etc., which are limited to the bounds of the individual, to formulate sharply the structure and meaning of 'in experience,' and to state clearly the relation of a wider all-including experience—if there be any advantage in such a use—to the narrower individual experience of every-day life.

With this clearly indicated exception, 'experience' then has so far been made the generic term for those 'individually bounded' needs, adjustments, events, etc., all of which agree, at the same time that they may have other *conferentiæ*, in being characterized by the presence of consciousness or 'awareness'. The act of alogical inference, to which the implied transcendent stands in the relation of a simultaneous 'in' and 'beyond,' is one kind of cognition, which in turn is one species of such a conscious experience; but it is my purpose to show that this relation holds good of all cognition.

Now it may be that in accepting consciousness as common and essential to all experiences, although I admit that the differentiation of 'object' and consciousness may be reduced to a 'mere datum,' I am taking a position that will not meet with general assent. As against this the claim may be advanced by some that conscious experience, of which as genus there are many species, is in turn a species coordinate with other events, adjustments, etc., forming 'unconscious experience'; and accordingly that both these species are subordinate to the genus experience as denoting all events and adjustments, etc., in the organism, both conscious and unconscious.

¹ The first two articles appeared in this JOURNAL, Vol. III., Nos. 8 and 10, respectively.

If this view be adopted,—and it certainly is permissible,—it is surely incumbent that the classification and the implied definitions be strictly observed. The specific connotation of ‘conscious experience’ must not be transferred either to the other species or to the genus; and this last should be regarded simply as a class name.

In some recent discussions, however, these principles are not followed; such a *generic* experience is made use of, but it soon *comes to be* viewed as something *realiter*, out of which, in the development of adjustments, etc., ‘conscious experience’ *separates*; and yet the generic experience is often, *invalidly*, treated as if it were conscious.

But the more important question is, if it is a justified procedure to make of *this* generic experience, or of the even wider all-including one previously mentioned, something *realiter*, a sort of universal and homogeneous *menstruum*, out of which conscious and not-conscious (physical) shall crystallize as functions of each other, etc. I believe that it is not, but that this ‘experience’ is only a conceptual product, with the only real experiences those either concrete conscious or physiological events. To view experience in such a way, *realiter*, is, I think, to slip back into scholastic realism.

Yet the view that experience is this *menstruum*, neither conscious nor physical, and in which differences are done away with, is sometimes held to be proved because psychology may point to a period in which, for example, subject and object are not distinguished, and because ‘things are to be taken as they come’. Upon this the criticism may be passed that ‘awareness’ may be present without awareness of itself, and that to fail to distinguish is not to be without distinction; accordingly, even at periods when they are not distinguished, two kinds of experience, conscious and physiological, may be present and yet quite distinct.²

Any other meaning of ‘experience’ than this last or that which I have chosen and endeavored to observe, namely, as denoting those events and adjustments which are *conscious*, is, I think, almost bound to lead to misinterpretations and ambiguities. For example, let experience be so defined as conscious; ‘in’ experience means then either ‘contained in’ or ‘biologically implied in’; only according to this second manner can the transcendent be related to that species which I have emphasized, namely, *alogical* inference. Nobody is willing to accept the transcendent as ‘contained in’ individual consciousness.

But let it be insisted, as it is by the ‘pure empiricist,’ that everything is ‘in experience’; let the character of the ‘in’ be not explicit-

² The question is really one of the ‘appearance of diversity’; but the ‘pure empiricist’ accepts without proof the premise that ‘to fail to distinguish is to be without differences.’

ly determined, but with this accepted implicitly as meaning 'contained in'; then, to avoid the solipsism of 'everything contained in individual consciousness,' let experience be used in the wider sense of a distinction-annihilating and all-containing something over and above and different from consciousness. Let all this be done, and then the slip be made, as it frequently and easily is, of regarding experience as conscious, and we are landed in idealism, either solipsistic or otherwise, according as the experience and the consciousness are made individual or not. It is essentially such a procedure on the part of the 'pure empiricist' that leads to and justifies the accusation that his empiricism is solipsistic or idealistic.

These difficulties and confusions are avoided by *keeping to* 'experience' as conscious and individual, and by regarding the relation of at least one species of this, the alogical inference, to the transcendentals as a 'biological implication.' Whether or not the transcendent is implied by all the other species and so by all alogical cognition is a problem to be discussed very presently.

In virtue, however, of the presence of implication, either logical or biological or both, as constituting in part at least the 'structure' of all cognition which is scientific knowledge, it is an essential characteristic of *all such cognition* that it *transcends itself*. Will, now, the examination of other types of cognition than those of inference reveal this characteristic for them also, and bring to light, perhaps, other types of transcendence than that of implication?

By way of answering this, let us consider first and briefly the memory experience. Now, it is a generic characteristic of this, that that which is undoubtedly 'in' the memory-act in some way (how? is the important question) is, however, also 'beyond'; for it is something past, something which, to be remembered, need no longer as beyond the act of memory exist *realiter*. It is 'beyond,' therefore, both as 'other' than and as *unalterable* by that act. This simultaneous and determinately related 'in' and 'beyond' constitute the 'transcendency' of memory. Yet from this standpoint the 'transcendency' would seem to be not that of implication, although, perhaps, well typified by this, but an original and unacquired *psychological* reference to an 'other.' As such it may be alogical, but even so it *may* also be different from the reference of the alogical inference-process to a transcendent. For the present it will be regarded as different, although later the question of the 'standing' of this distinction will be raised.

In the second place, and only to make the scheme complete, it may be remarked that imagination, as the type of cognition whose reference may be to the future, has the same general characteristic of

transcendence, with the exception of the temporal difference, as has memory. Under it the inference-prediction may be subsumed at least in part.

The third kind of alogical cognitive experience which transcends itself, and in the examination of which further details as to the nature both of biological implication and of the correctness of data will appear, is perception, or, if one prefers, mature 'simple apprehension.' That which is established for perception will *mutatis mutandis* supplement that which has been stated concerning memory and imagination. Now, in the first place, here, even granting that that which is perceived may not always be distinguished, but maintaining that it still may be distinct, the type of all those perceptive experiences which here concern us is undoubtedly that in which it is 'felt' that the 'external world' is experienced and in which the reference to an 'other' takes a spatial and 'now present' form. Whether this 'other' is unalterable or not, independent or not, etc., is a question to be considered later. The type is, however, the normal perception, of which subsequent reflection and correction are confirmatory. This means that even hallucinations are after this model. As Professor James says of them: "We act as if a real object were there, which, however, there is not"; "there is no objective stimulus."³ Sense perception, then, is no exception to the rule, so far found, that the cognitive experience is one which transcends itself. As a normal and original characteristic of it, there is psychologically, and perhaps therefore biologically, a reference from 'within' to an 'other' beyond.

Finally, that the concept, as a cognitive type, is characterized in a generally similar manner needs only to be mentioned here. As an act unitary to a large degree in that it is not made up of a 'Hintergrund' or of a collection of individuals, it transcends itself in that it stands for not only something 'other' than itself, but for a manifold of 'others' actual and possible.⁴

The above examination leads to the conclusion, that characteristic of that kind of alogical knowledge which may be said to be distinct in some respects from knowledge by judgment and inference is its transcendence of itself. It is an original and underived psychological mark of it, as we are acquainted with it in the experience in which problems arise, that it is its very nature to know something

³James, 'Principles of Psychology,' Vol. II., p. 115.

⁴There may well be other cases of transcendency of the alogical kind involved in one way or another in cognitive experience (compare, for example, 'The Self-Transcendancy of Knowledge,' W. B. Pitkin, *The Philosophical Review*, January, 1906), but at this point they do not concern us intimately.

'other than' and 'beyond' and yet in some way 'in' itself. Alogical judgment and inference may show this characteristic, and this and biological implication may prove to be one and the same thing regarded from different view-points. In distinction from alogical knowledge, there is, too, the purely logical inferential process, in which each element by virtue of the formal implication present transcends itself. All knowledge and cognition, then, is characterized by transcendency.⁵ But with two kinds, the logical and the alogical cognition, the transcendency must differ in some respect, so that it *may be* that the essential characteristic of all alogical cognition consists in its transcending itself in a direction to *know something other than itself in kind*.

Evidence for this view has already been presented, but further support is to be derived from other sources also, namely, from the examination of the nature both of the 'other' of sense perception and of the 'correctness of data.'

Is that 'other' to which the act of sense perception makes a reference in transcending itself like in kind to the perceptive act or not? According as this question is answered negatively or affirmatively, we have bases for different philosophical systems; whence its importance.

The evidence for our answer converges from many sources. Firstly, the reference is not one of logical implication; it is immediately psychological in nature; accordingly, it may or may not be like or identical with 'biological implication.' Secondly, evidence comes from our analysis of memory. In the very nature of the case, that to which the memory-act refers is not only 'other' than but it is also in some respects 'beyond' the influence of that act, 'unalterable' by and 'independent' of it. By analogy, *it is possible* that the perception is of an object which, in every respect except for its being perceived, is unalterable by and independent of that act. This may not be an absolute independence, for the perception does undeniably 'make some difference.' But the thing may be 'really there' first, to be made just *this* 'difference with' subsequently, that it is perceived, provided that the conditions for this are present. Analogous to the 'axiom of free mobility,' there may be that of 'free perception.'⁶

⁵ Compare the discussion between Professor Woodbridge and Professor Dewey in this JOURNAL, Vol. II., Nos. 21 and 24, under the titles 'Of What Sort is Cognitive Experience?' and 'The Knowledge Experience and its Relationships.'

⁶ Compare Professor Woodbridge's article, 'The Nature of Consciousness,' and Dr. Montague's, 'The Relational Theory of Consciousness and its Realistic Implications,' this JOURNAL, Vol. II., Nos. 5 and 12, respectively.

Furthermore, it is possible that the numerical difference therewith demanded extends to a difference in kind; yet, in order to remove this from the realm of possibility to that of actuality, it is necessary to show that the independence and unalterability are supplemented by or are 'one with' permanence and uniformity, etc. The evidence for this comes from a still different source and must be gained gradually.

Now, it will be accepted, I think, that normal perception is the type to which also that which subsequent corrective cognition distinguishes from it, namely, hallucination, conforms. This distinction, which is one of correct and incorrect, or of true and false, is possible and is made validly only by there being for the act of normal perception something 'other' than that act, yet to which the perception points, and which *exists* external to and 'beside' this. The failure to make this distinction at the time of the perceptive or hallucinatory events is not the same as the absence of a difference between the two. This can not be done away with, nor can either be reduced to the other. They are of one type simply in their primal psychological form. Furthermore, with the example before us of the inability of the memory-act to alter its object, it can not be claimed, at least without further proof, that the subsequent cognitive act in which the above distinction is made alters the original real status, namely, of an object present in one case and not in another. The distinction made stands for a real distinction, present independently of the making of the distinction. To take the contradictory position, in general, that subsequent cognition alters that which it knows in transcending itself, germinates a self-repeating series which results in complete skepticism unless the law of that series is discoverable.⁷

Now, this distinction between correct and incorrect, or between true and false, either itself is, or involves, a further and most important one, namely, between the *content* and the *object* of perception. Heretofore it has not been always possible either to make or to keep this distinction a sharply drawn one, nor is it one which has met or will, perhaps, meet with general approval. But, now that it can be stated clearly, to do this will be conducive to a greater accuracy and exactness, and even correctness, in our subsequent discussions.

That the difference stated is legitimate, valid and necessary is shown, I believe, by the following considerations. It is admittedly characteristic of hallucination that the psychological reference to an 'other' takes place and yet that there is no object present. The act

⁷ Cf. the discussion between Woodbridge and Dewey, previously cited.

is in this respect 'purely subjective.' Yet it is also undeniable that hallucinations differ qualitatively among themselves. Such qualitative differences must, then, be entirely subjective, that is, they are 'contained within' the hallucination itself as a psychological and a subjectively limited natural event. In this respect, and for this reason, therefore, the hallucination has *content*.

In normal perception, there is likewise an unacquired reference of the act beyond itself to an object whose *actual* presence is, however, subsequently confirmed. And yet, with this distinction drawn between 'object' and 'act,' it may be regarded as valid, in fact it seems necessary to assert, that, in analogy to the 'content' of hallucination, there are in addition to the qualitative differences among the objects, also qualitative differences among the perceptive acts as subjective events. Such differences, then, may be said to constitute the *content of perception as distinct from the object*. The former is 'contained in'; the latter is both 'beyond,' as real, and 'in,' as known, according to the *manner* of biological implication. The unique and determinate connection of this simultaneous 'in' and 'beyond' constitutes the *transcendence* of the perceiving act, present in it prior to any critical or reflective knowledge of it, and in this respect an original and native characteristic. Furthermore, it is, indeed, just those qualitative differences among the subjectively emanating references that constitute, along with other things, perhaps, the differences among the '*contents*' of perception and help to justify the distinction which has been drawn between content and object.

Can it be shown now that this psychological reference, at least when it is 'correct,' as in normal perception, coincides with implication logical or biological? That it has some of the characteristics of that has already been seen. In answer thereto, it may be said, first, that from the purely logical or propositional standpoint the hallucination as false implies the normal perception as true; or, from the factual view-point, as incorrect it implies biologically the normal as correct. The normal, as true, is implied logically by that *system* of propositions which is accepted as 'true knowledge' because at the same time that it conforms to the norms of consistency it is also *successful*. Not to consider here what is implied for success—but simply to take the system as a successful one—it is found that, in that it implies the normal perception as true and as correct, there is also implied a transcendent object of perception as present whenever the same subjective conditions of perception are repeated.

The *truth* and *correctness* of the perception mean, then, that, with qualitative and quantitative differences in the object on the one hand, and in the 'content' on the other, there is between the percep-

tive act and the object to which it refers an unequivocalness and determinateness of the relation of transcendence. Such a reference and relation are the ideal for every perceptive act, and constitute that ideal '*correctness of data*' which, in addition to the other conditions already expounded, is also necessary for the success of alogical knowledge or inference as a means of readjustment. Herewith is a question raised in our first article duly answered. Not only this, but, also, a solution to another problem appears. The perceptive act's transcendence of itself, the unequivocal and determinate pointing from *within* itself to an 'other' beyond, *this reference* now emerges as at least a *special case of biological implication*. For although, as put in propositional form, it may be said that the system as true implies *logically* that a transcendent object is present to normal perception, the real psychological status of the relation between the two is other than propositional; it is adaptive, biological.

It is now possible also to give an answer to the important question raised some paragraphs back, as to whether the 'object' of sense perception is like or unlike in kind to this as a conscious, subjective experience. It has already been found that it *may* be that the object is independent and unalterable. *Now* it appears both that the object is implied 'as present to' and yet that as known it is 'in' that act of perception which is implied by the system as normal. But it is *this very system* which implies biologically, or logically if put in propositional form, as a necessary condition for its success, an independent, unalterable, permanent and uniquely causal transcendent. It would, therefore, seem that these characteristics must be and are compatible with a manifoldness within the transcendent; for success demands not only consistency, and a transcendent, but '*correctness of data*'; but correctness of data is constituted, as has been seen, by a determinateness and unequivocalness of relation between subjective, conscious event and object. Such a relation is possible only if there are objective differences which 'make out' a sort of point-to-point correspondence with differences among the perceptive acts. It is implied, then, that the transcendent is a manifold; that the object of perception itself is an *element* in this manifold and, accordingly, that it must in some way share the characteristics of permanence and causal regularity as well as those of independence and unalterability. These last two, which formerly appeared only as possible for, now emerge as demanded in the perceived object, as characteristics necessary for the success of alogical knowledge. To consider how these four characteristics can coexist, etc., does not lie within the range of this paper, but, since the object of perception must, as an element in the transcendent whole, participate in all of .

them in some way, it is different in kind from the perceptive act and its content.

At this point, also, there appear further details as to the very character of the 'transcendence' in perception. This last is 'objectively certain' when it is correct. This certainty and correctness, together with the fact that the perceptive event takes place independent of and even against our 'willing,' and that for it certain definite subjective conditions must be present, demand that the perceptive act be regarded as the result of a unique causal action between transcendent elements, some of which are within the limits of the individual organism. This causal action *mediates* or is the basis for the psychological reference which takes place, as it were, in the opposite direction, and which has been found to be also a case of 'biological implication.' To discuss how such a mediation can take place or is possible does not, although it admits, I believe, of a fairly definite answer, fall within the purpose of this paper. However, the reference, so mediated, may be said to be a quality of a perceptive event standing in a certain relation to really existing 'things.' These 'things,' *whatever* their further 'nature' may be shown *by subsequent philosophical criticism to be*, are known 'in' this self-transcending perceptive act as things, qualities, events, relations, as the 'elements' and 'constituents' of a permanent, unalterable, causal transcendent. They are also independent in the sense of 'being already there,' to be made 'the difference with,' under definite transcendent conditions, of being perceived or, in some other way, known. They, accordingly, get 'into' consciousness in a way which is quite compatible with their being also 'beyond,' namely, in the way that the implied is both 'in' and 'beyond' the implier. Their relation to consciousness is accordingly that of being implied, known and pointed to by it when they, or some of them, as 'already there' bring about the conditions to mediate this implying, knowing and pointing. Consciousness, then, would seem to have just this last threefold function, and also perhaps, in that in it implication immediately originates, the further function of making knowledge by inference possible.

Given the above-mentioned transcendent conditions, including an essentially similar perceptive organization in all human individuals, and there will be, and in fact only on this basis can there be, a consistent and harmonious social living and organization such as includes science itself, with its 'Allgemeingültigkeit' and 'Denknotwendigkeit.'

EDWARD G. SPAULDING.

PRINCETON UNIVERSITY.

SOCIETIES

THE SIXTH ANNUAL MEETING OF THE WESTERN
PHILOSOPHICAL ASSOCIATION

REPORT OF THE SECRETARY

THE Western Philosophical Association held its sixth annual meeting conjointly with a meeting of the North Central Section of the American Psychological Association, at the University of Wisconsin, Madison, on Friday and Saturday, April 13 and 14, 1906. Forty members of the two Associations were present, representing some twenty-nine universities, colleges or other institutions. The meeting was in every respect an uncommonly successful one, the arrangements for the lodging and entertainment of visiting members provided by the hospitality of the members of the University of Wisconsin being admirably adapted to promote a better acquaintance amongst the members, and to make possible an unusual amount of that informal discussion in which the value of such a meeting largely consists. The visiting members were lodged as the guests of the University in the Y. M. C. A. Building, and dined together at Chadbourne Hall. Four joint sessions were held, and the Associations each held one separate session. Of the joint sessions, one was devoted to a discussion on 'Recent Arguments for Realism, with especial reference to the Relations of Realism and Pragmatism'; another to a group of papers on the 'Psychology of the Moral Consciousness'; and another to an extremely interesting address by the retiring President of the Western Philosophical Association, Professor J. H. Tufts, of the University of Chicago, on 'Some Contributions of Psychology towards the Conception of Justice.' At most of the sessions there was extended and vigorous discussion of the papers read, especially at that devoted to 'Pragmatism and Realism.' For this discussion a special bibliography of recent papers on the subject had been prepared and sent to members in advance of the meeting. At the business meeting of the Western Philosophical Association, W. B. Pillsbury was elected president; Norman Wilde, vice-president; J. E. Boodin, secretary-treasurer; and J. H. Tufts and A. O. Lovejoy members of the executive committee. Dr. B. H. Bode, Dr. Percy Hughes, Dr. J. R. Farley, Professor E. B. McGilvary, were elected to membership. The treasurer's report showed a balance of \$66.52. The selection of the next place of meeting was again left to the executive committee. Abstracts of papers, so far as the secretary has been able to secure them, are appended.

Discussion: Recent Arguments for Realism, with especial reference to the Relations of Realism and Pragmatism.

1. H. W. STUART. Realists impute to idealism the belief that the object of knowledge is in the last analysis naught but one's own mental image. Whether or not this be a caricature of idealism, it is at least tolerably evident that the realists do not themselves succeed in keeping clear of it. The essence of their difficulty lies in their professing two incompatible principles: (1) In the knowing experience the object known is immediately present without the intervention of any mental image, and (2) knowledge is an awareness of a simultaneously existent real object. One of the principal motives of realism is, apparently, a dread of solipsism. This explains its insistence upon the representational theory of knowledge—the object must be simultaneously present, and unmodified by the fact that it is known. This is a falsification of the analysis given of the knowing experience. As if by way of adjustment between these conflicting views, we find realists talking of 'diaphanous' or 'perfectly transparent' mental images, or of a 'unique element of awareness' present in all sense-experiences as the distinctively conscious element in them. The banished mental image has been let in again by the back-stairs. Pragmatism tries to take seriously the analysis of knowing which realism also professes to believe in. It rejects the representational theory of knowledge and thereby avoids the danger of being cut off, like realism and idealism, from any possibility of distinguishing truth from error in detail, taking thus to heart the warning of the *Theaetetus* against so defining truth as to have no way of identifying true judgments. Pragmatism has this fault to find with the so-called relational theory of consciousness nowadays associated with realism—that it is either a mere metaphysical theory of the status of consciousness in a reflective scheme of cosmology, and so gives no significant account of consciousness from within as immediate experience; or else it slips back, in trying to do this latter, into the use of terms suggestive of the 'mental image' theory, as when consciousness is said to be a 'glow' in which real things are lighted up for knowledge. Pragmatism takes it as a matter of course that experiences empirically occur, and fixes its attention on the problem of determining the logical and ethical significance of these. Realism and idealism in the end succeed in saying no more than that experiences actually do occur—they can not account for these empirical qualities. If these are real things, it would seem to the pragmatist that they can not be known in experience in the face-to-face representational way, but rather that

experience is, as a metaphysical process, the ultimate import or fruition of them.

2. B. H. BODE. The realism which asserts that experience brings us face to face with an independent external order is reducible to two types, of which the first recognizes two forms of knowing, while the second recognizes but one. These two forms of knowing may be indicated as respectively 'acquaintance with' and 'knowledge about.' The distinction between the two lies in the fact that in the former the object is a modification of the conscious state itself, while in the latter it is not. As yet the realism of the first type has not reconciled its contention that knowledge is twofold in form with the affirmation that experience brings us into the immediate presence of objects. On the other hand, the second type of realism has failed to reduce all knowing to the form of knowledge-about. Pragmatism may be considered as mediating between the two types of realism. The difficulties of realism, it is held, originate from the fact that the object of knowledge is treated as a ready-made datum. According to pragmatism, all the difficulties may be obviated if we distinguish between pure experience and consciousness. This distinction enables us to affirm both that objects are experienced directly, since they are synonymous with pure experience, and that consciousness is reducible to one form, since it consists of relational elements. This view, however, necessitates a derivation of consciousness, and at this point pragmatism fails. The only positive conclusion that appears to emerge from these various considerations is that a twofold form of knowing must be assumed. The metaphysics involved in this assumption remains as a separate problem.

3. S. S. COLVIN. The critics of pragmatism find in it the implications of subjective idealism; its supporters, on the other hand, are outspoken in the assertion of its fundamental realism. Defining realism for the purposes of this discussion as the belief that with every noetic state there is something that exists independent of this state, which is extramental and to which the noetic state points, let us inquire whether the pragmatist reaches a realistic basis. Pragmatism speaks of pointing, of the growth of one experience into another, of a total experience of which the present is merely a part. This transcendence is, however, from one experience to another. The pragmatist nowhere finds room for a pointing to an extraexperiential reality. The pragmatist by his doctrine of experience does not therefore reach a realistic basis, as the term realistic is used in this discussion. The pragmatist, however, makes pure experience a reality independent of the noetic state, and conditioning it. Here he has reached a realistic basis, but without warrant. From experience

as we know it we can never arrive at pure experience. It is an abstraction. The absolute idealist interprets thought in its highest terms and reaches an absolute thinker. The pragmatist interprets thought in its lowest terms and arrives at pure experience. Neither idealist nor pragmatist can deduce his ultimate from experience as we know it. The pragmatist asserts that many minds can know the same thing, just as many lines may have one point in common. This is an argument from analogy, and is imperfect. The pragmatist also asserts that space is the same for all minds, while he admits that objects in space are just a little different for each individual. These two assertions seem inconsistent. Pragmatism has failed to recognize the transcending element in the noetic psychosis, and it must share the fate of all philosophies that regard merely the flow of experience and ignore the realistic attitude of knowing. It reaches a real only by forcibly transcending the flow of individual experience. Pragmatism, therefore, should be interpreted as essentially idealistic.

Humanism and Absolute Subconsciousness: F. C. DOAN.

The paper concluded as follows: With Hartmann the automatic character of subconsciousness is concealed under terms of soothing evasion. Nevertheless, by his own showing every articulate connection between absolute and human self-consciousness breaks down. An experience so faultlessly automatic, so perfectly instinctive, so smoothly functional that it never falls ill, is never weary, is never sensuous, never vacillates, requires no time for reflection, never errs, never has occasion to remember or anticipate, and in which will and representation are in inseparable unity,—an experience so smooth as all this eludes the grasp of the finite, coarse-grained experiences of men. The self-consciousness of the latter consists in the very fact that they do fall ill, do grow weary, are sensuous, vacillating, erring, and in need therefore of guidance and chastening through memory. Human self-consciousness exists on the sole condition that will and idea remain thus mutually contradictory. A rigorously remedial transcendentalism does indeed relieve the sickness and pain of finite self-consciousness, but only by administering to finitude an absolute anesthetic—a thoroughgoing euthanasia no human convention is ever likely to legalize. The very moods in which under pain of self-diremption men have become self-conscious, these incertitudes, these tragedies, these sicknesses of the soul, are symptomatic, according to cosmic humanism, of the self-diremptive and imperfectly self-sacrificial character which persists as an eternal

defect, a fundamental stimulus in the very heart even of ultimate experience.

The Feelings as a Source of Knowledge: E. D. STARBUCK.

The truth quality in art, morality and religion must be admitted to be inadequately exploited by our sensation-cognition-intellection psychology. The usual explanation, *viz.*, that the 'worth,' or 'values,' and the totality-feeling involved are due to the creaming off of a multiplicity of dimly perceived associations, seems more ingenious than satisfactory. It may be logical, but it is not true to introspection. In the light of recent developments in psychology this view is becoming altogether untenable. The view herein presented is that the truth that seems to arise through love, art, conduct and religion, comes through the feelings, *i. e.*, that it is a conative-affective process that is reported directly to consciousness through the feelings and not through the mediation of cognitive processes. These latter, of course, demand satisfaction, but in these particular fields their demands are secondary both in time and importance, and the satisfaction is essentially a *sense* of fitness, harmony and adjustment. The truth that comes from these forms of 'appreciation' is real information; it is, in its elaboration, of the nature of 'knowledge,' and this without abusing the accepted use of that term. The lines leading to this view are: 1. The subliminally right interpretation of imperceptible stimuli. These may be, since not capable of introspection, either cognitive or predominantly conative-affective. The latter view is the least inharmonious. 2. The facts of comparative and genetic psychology. The conative-affective states and processes must have been originally about the only forms of consciousness. Still they led to 'knowledge,' *i. e.*, such a representation to the self (through feeling) of the elements of experience that may, on occasion, be used more or less consciously for the ends of life, chiefly for the sake of fuller adjustment. 3. The facts accumulated since Mosso's early experiments, in regard to organic responses to stimuli. These have made something like the James-Lange theory of the emotions inevitable. The somatic response is immediate and instinctive, and appropriate to the stimulus. There is much such evidence that the organic reaction is as apt to precede as to accompany or follow the stimulus. The anatomical work of Oppenheimer, ('Das Gefühl') and experiments such as those of Ferè and Jaël upon musical appreciation, seem to show that 'appreciation' is but the immediate apprehension of the presence and quality of organic responses. 4. A truer analysis of the feelings. They seem to be as manifold as the variety of experiences, and not two-

fold or fourfold or sixfold. They are also as truly 'objective' as are sensations and perceptions. Any fair analysis of a feeling shows that it reflects subjective conditions, external facts and the relation of subject to object; just as do sensations. The latter are mediated through association because their data are discrete, while the former are immediate. The truth that comes through feeling is as 'objective' as is that through intellection. 5. The facts of physiological psychology. The sympathetic nervous system and the vasomotor mechanism have become distinctly and progressively differentiated, in the course of evolution, from the central nervous system. Until this long course of development can be retraced or eliminated, both nervous systems will probably continue to do business somewhat on their own account, and we shall have a world of 'appreciation' set off against a world of 'description,' the esthete and religionist inharmonious with the logician and scientist, and the truth of feeling opposed to the truth of intellection. This point of view has significance, not only for psychology, but for epistemology. It is psychological dualism or pluralism which may, upon reflection, tend to at least make more credible a philosophical monism.

Ideas and Conduct: JOSEPH HERSHEY BAIR.

Every idea has an image which serves as a stimulus in determining our conduct. An idea is often so potent a factor that we are swayed by it, and ignore our immediate surroundings. Our view of life is the background in which our ideas are set, and through which our ideas and perceptions have value. In dealing with our fellowmen in an efficient and satisfactory manner, it is indispensable to be able to take an inventory of this background of valuation. In order to modify or control their actions, it is necessary to modify and control their imagery. In communicating with others, we do so also through imagery. If the images do not correspond, communication is indefinite. This rich field for inquiry, into which the psychologist is often unwillingly forced through his contact with the educator, has great possibilities. The practical side of psychology would yield great results to the trained specialist if he could be induced to enter it.

Meaning: W. B. PILLSBURY.

Meaning in the logical use is a term that must be given also a psychological value. We find historically that meaning is treated as something added to or subtracted from the given, as in judgment, or that it has been used to designate the fact that we immediately pass from the given image to a connected order interpretation.

Both uses are shown by introspection to designate events that actually go on in the mind. In perception there is always some one phase or attribute that stands out most clearly and, furthermore, it is seen that in perception there is nothing but this phase or aspect. The background or image from which abstraction is made simply does not exist, but is an *ex post facto* interpretation to explain the event. In the same way, when selection is made, we immediately tend to see, not the sensation or perception itself, but the earlier development construction that explains and makes consistent this and other sensations or perceptions. This again is not an exceptional event, but is involved in all perception. Meaning, then, is a fruitful way of regarding the mental states, but is not in itself a new process.

Space and Reality: JOHN E. BOODIN.

There are two aspects to the development of the space concept. One emphasizes space as series or ideal construction. This is the case with the Kantians. In so far as space is serial, I would agree with Kant that it is ideal. This, however, does not exhaust the space concept. On the contrary, the convenience of this conception implies another aspect, the ontological or non-being aspect. This is already implied in the hypothesis of the void made by ancient atomism. It was, however, merely dogmatically asserted, and unwarranted deductions were drawn from it, as was shown by Aristotle. Critical philosophy, however, is forced to acknowledge a real space zero: (1) because, in spite of Parmenides, it is conceivable; (2) because it is convenient to presuppose it as a limit, both in experiments that have to do with approximation to a vacuum and in conceiving Newton's first law of motion; (3) because it is presupposed by geometry in its axiom of free mobility; (4) because it makes possible the conception of distance which conditions both the equations of the astronomer and intersubjective intercourse; (5) because it simplifies the problem of the attributes of space, the only attributes that can be regarded as spatial being non-resistance, or the possibility of free mobility, and distance. Extension, continuity, divisibility, dimensionality, etc., must be dealt with as physical attributes according to our convenience in manipulating physical things. Thus, the stock antinomies brought against space as quantitative, infinite, etc., become irrelevant. Quantity and infinity belong to our ideal tools, not to reality as such. (6) Aristotle's arguments against the void, while valid as against the conception of the atomists, would have no force as against this conception. On the contrary, his own conception must be regarded by us as merely ideal. (7) The con-

ception of distance can not be regarded as the property of things, but conditions the behavior of things. (8) This conception satisfies our space intuition. (9) Finally, this conception satisfies the criterion invoked by the Kantians themselves, *viz.*, that those conditions which limit, and must be taken account of in the realization of purpose, must themselves be real.

The Psychological Basis of Ethics: J. DASHIELL STOOPS.

Three things must be dealt with in the problem of the will. There is the mechanism of motor response; in the second place, the response is influenced by feelings; and, finally, motor responses and feelings must be guided by the intellect to make possible voluntary activity. The motor and feeling elements we treat together. The foundation of the mind is in motor responses and coincident feelings. Reflex and instinctive actions, with their correlative feelings, constitute the foundation upon which rests the developed moral will. Non-voluntary forms of activity and feeling elements are accordingly fundamental in the treatment of ethics. The significance of habits and instincts is vital for the evolution of the moral life. The function of the intellect is to guide and organize these non-voluntary and emotional phases of experience. Voluntary action is itself a higher form of motor response, expressing itself through general ideas. For ethics we may speak of two types of non-voluntary response; individualistic and social. Both forms must be under the control of the will before they can be regarded as constituent factors in the moral self. The moral life is largely a matter of proportion. The world is not made up of people who are good or bad, but of those who are better or worse. The same ingredients of character are in the criminal and the good. Ethics must learn from psychology and sociology. Its method should be psychological, and not metaphysical.

Determinism in Motives: BERNARD C. EWER.

The naïve interpretation of decision involves two apparently contradictory ideas; determinism and indeterminism. The latter is frequently rejected as absurd, yet the former depends upon a quantitative conception of psychical activity which is not revealed by introspection, nor logically implied in the conception of causality. The analysis of motives shows qualitative, not in general quantitative, relations among desires, hence an absolute determinism is fictitious. Decision is influenced by truly efficacious motives, but it is always to some extent experimental, and, indeed, a 'chance' occurrence. This does not imply that it is uncaused, since the ordinary absolute dis-

junction between law and chance applies only to the abstractions themselves, not to the real facts. Hence caricatures of indeterminism as pure lawlessness, non-moral, etc., are irrelevant. The truth is double: we are creatures of habit, and we create the habit; from one point of view, our conduct is determined; from the other, undetermined; but neither aspect is absolute. To understand how apparently contradictory conceptions can both be true of reality we must refer, as in all ultimate comprehension, to the fact itself.

The Self and the Selves: PERCY HUGHES.

The term ego should be reserved for the individual who is self-conscious, who says or feels, 'this is I.' The term self stands for many ideas which, while of all of them we say 'this is I,' yet are more diverse than commonly is thought. Indeed, how the term self applies to them all is hard to say. Each with its corresponding not-self makes up a universe in which no other *self* is found. These ideas are here called categories of self, and of them eight are distinguished: the 'knower,' the 'experiencer,' the 'will,' the 'historical,' the 'bodily,' the 'ideal,' the 'realization' and the 'socius' self. The value of such a list is shown in many ambiguities which are to be found in most assertions made of self when the distinction between selves is not noted. In the definition of those emotions in which ethics particularly is concerned, these distinctions should render much service. Pride is always a sense of the superiority of self over the not-self, but it is only in the kind of pride which is concerned with the historical self, a pride that is always best called vanity, that the comparison with other people is involved.

The Influence of Self-Consciousness upon Volition: ARTHUR O. LOVEJOY.

The older psychology of volition assumed that reflective volition always involved the representation of some future situation, and of some satisfaction of the self of the chooser, to be realized at the conceived future moment. We now, however, have become familiar with the fact that the self which must be satisfied in order that volition should take place is not the represented self of the future moment, but the representing self, or ego, of the moment of decision; that it is, in the familiar phrase, not the idea of greatest pleasure, but the most pleasant idea, that normally determines choice. Assuming this much to be established, the question arises how this volitional situation is affected by self-consciousness; for if all profitable ethical theory must take its point of departure in a psychology of volition, it must *a fortiori* take its point of departure in a consideration of the effect of man's power of self-representation upon his

volition. This subject has not yet been adequately treated by either psychologists or ethical theorists. It has been held by some (not only by hedonists, but also by the school of Green) that self-consciousness makes man necessarily egoistic or self-referring in his choice of future situations. In reality, however, the most significant function of self-consciousness is to bring it about that the ego is capable of being interested in its own ejective self as an object of possible approbation or disapprobation, and of finding any representation of the ejective self in which it possesses qualities that the ego does not admire or approve, an unpleasant idea. The dominant desire of the self-conscious animal is to think the right kind of adjectives or epithets as attachable to its ejective self conceived as a doer. So far from being an unimportant or secondary factor in the determination of volition, this desire to conceive of the self as acting in a manner which the ego can, at the moment of choice, regard with satisfaction is the ultimate motive in all deliberate choosing. All moral discussion presupposes the existence of this solicitude, not about the end of action, but about the character of the agent, upon the part of the participants in that discussion; the moral 'ought' is meaningless except in so far as this kind of desire is presupposed in the person to whom the 'ought' is addressed. The desire in question has distinctly the 'when me they fly, I am the wings' character. He who denies that he is actuated by such a motive, or who declares such a motive to be something else than moral, is obviously doing so precisely because of his unwillingness now to think of his self as the subject of unadmired predicates, such as 'irrational' or 'self conscious' or the like. There are, in short, only two fundamentally distinct forms of interest that determine deliberate choice: (a) the direct or spontaneous interest in a conceived future situation that may result from one's action; (b) interest in having the self *in action* the subject of approved predicates. The former is not strictly ethical at all; one in this situation either does or does not now desire some conceived future situation, and if one does desire it the word 'ought' is irrelevant. As soon as discussion arises as to what a rational object of desire is, the implicit appeal is always to this other kind of interest in the predicates of the self conceived as chooser or doer.

The Alleged Blindness of the Common Moral Consciousness: FRANK CHAPMAN SHARP.

According to many contemporary moralists, the moral judgments of common sense are blind, in the sense that they arise without any accompanying consciousness of their rationale. The paper presents

the results of an attempt made to test the truth of this view, by an examination of the answers to certain questions in casuistry given to students in the University of Wisconsin. The questions—always stated in concrete form—involved the following principles: the permissibility of lying, of breaking a promise, of breaking a contract, of stealing in order to preserve life, of killing those hopelessly sick with cancer. The records supplied by the written replies were supplemented in many cases by personal interviews with the writers. Eighty-four answers were obtained from students in the College of Letters and Sciences, and forty-nine from first-year students in the 'Short Course in Agriculture.' In addition, eleven college students reported that they failed to reply because in some or all cases they could give no reasons for their answers. Four of these were interviewed in order to discover the exact significance of this statement. The conclusion reached from the examination of the data supplied by the members of the College of Letters and Science was that not more than twenty-five answers out of a total of over four hundred could possibly be counted as immediate, and of this small number only one or perhaps two could be so considered with any degree of certainty. While the existence of unreasoned moral judgments was thus rendered highly probable, they were shown to be, in this group of persons at least, an isolated phenomenon. The results obtained from the students in the 'Short Course in Agriculture' were even more striking. Not a single answer was found that could plausibly be considered 'blind,' in the sense of immediate or wholly unreasoned.

The Relation of Sentiment to the Taste of Foods; a Chapter in Applied Psychology: W. D. SCOTT.

Our appreciation of food depends only in part upon the gustatory sensations. With our rural ancestors these gustatory sensations were the principal factor in the selection of what should be eaten. With us of sedentary habits and more highly developed esthetic sense, the appearance of the food and sentimental associations have assumed a fundamental importance. Certain parts of turkey can not be discriminated from pork by gustatory sensations, but we all greatly prefer the turkey because of the sentimental associations which enshrine turkey. As a result of this change in our standards of selecting our foods, the American people are annually eating less and less of those foods which are unesthetic in appearance and association. On the other hand, there is a decided increase in the consumption of certain foods which appeal to the esthetic judgment of the purchasers. The producer and the salesman are beginning to appreciate this fact and to present their products to us in

such a form that they satisfy our changed standards. Provisions are delivered in neat packages and not in bulk. The most effective advertisements have as their object to create a sentiment for a food comparable to the sentiment which has grown up around turkey and quail. In certain instances such a purpose has met with pronounced success. In such instances the advertiser not only induces us to buy his commodity, but he has a nobler function, and a more profitable one, of causing us to enjoy the food after we have secured it.

A Stereoscopic Demonstration: JOSEPH JASTROW.

The demonstration included (a) a group of devices for class instruction in stereoscopic principles; (b) an historical series showing the development of the stereoscope and the variety of devices in which the common underlying principle has been applied; (c) recent improvements in the instrument, for the purpose of approximating the relation of the retina to the photograph to that of the eye or eyes in viewing the actual scene; (d) a series of specially arranged views to illustrate the several points concerned in the psychology of visual interpretation of the third dimension of space,—such views attempting as well the evaluation of the importance of the contributing factors in isolation and in combination. In the first group were demonstrated groups of models, two-dimensional and three-dimensional, and devices for acquiring stereoscopic vision of photographs with the eyes alone, unaided by an instrument; the second group included the several refracting and reflecting varieties, color-stereoscopes, and approximations to depth-vision with one eye; the verant lenses for monocular and binocular vision and the Zeiss stereoscope, as also the relations of the focal length of the photographic camera to the view, were considered in the third group; the views exhibited in the fourth group included demonstration of the effect of light and shade, background, familiarity, transposition, contour-lines, interposition of objects, subjective inference and related points. A manual of stereoscopic vision is in preparation in which these views will be published.

A Visual Illusion of Motion: E. JENNER.

The illusion begins with the vision of a rolling disk with radiations like the spokes of a wheel, seen by interrupted light or as through the pickets of a fence. According to time-relations of the interruptions of the 'pickets' and the 'spokes,' the wheel breaks into multiple striations, that themselves as a whole move forward, or backward, or stand still. By making the 'fence' pass by under regulated speed, a revolving disk may be substituted for the rolling wheel, and the whole phenomenon carefully and conveniently studied. When

viewed through a rotating wheel with open sectors, a portion of the phenomenon may be resolved. While the whole range of appearances may be derived from the mathematical relations of rate of travel and interruptions and the duration of the after-image, the complexity, variability and brilliance of the effect give the demonstration of the illusion by these devices a peculiar interest.

Problems in the Analysis of the Memory Consciousness: F. KUHL-MANN.

The problems in the analysis of the memory consciousness that seem at present most significant may be stated under three heads: A. The analysis of the memory consciousness into its elements; B. The function of these elements in the memory consciousness; C. The nature and causes of memory illusion. A. Recent progress in the analysis of perceptive experience offers new problems in memory analysis. Biological interpretation in both gives new views on their interrelation. There are animal minds without memory, and probably several different forms of memory. The more special problems here concern (1) images of sensations through the special sense organs, (2) organic images in general, (3) the elements in the recognitive consciousness. (1) In our ordinary memory we image only a small portion of readily discernible sensory qualities. There is also a great difference in the ease with which images for the different special senses are aroused. Interpretation of the latter calls for a number of further considerations. (2) The first general question concerns the part played in memory of complexes of organic sensations that are not connected with the perception of objects, but are expressive of bodily states and in general enter into the moods and dispositions of consciousness. The second concerns the reproduction in memory of organic reactions set up in the perception of an object. B. The elements of memory may be considered with reference to their function in (1) recall and (2) in recognition. (1) If in recalling how a thing looks, we call its visual image primary and all others secondary, our first questions concern, first, the part secondary images in general play in the production of primary, and, second, how this is dependent on whether the primary is in one or the other sense department. (2) When secondary images follow the primary they may, in the recall of meaningless visual forms, (a) strengthen the memory certainty, or (b) they may leave it unaffected, or (c) they may be of such a nature as to contradict the primary image, resulting in uncertainty. C. Three general suggestions can be made at present. (1) Much of our so-called memory is not memory, but inference. (2) There is a tendency to remember things,

in any particular case, as we are accustomed to experience them. (3) Esthetic influences produce memory illusion. All of these suggestions are of interest, not so much because of the facts they indicate, as because of the problems they present.

Accuracy in the Judgment of Size and Distance: A. M. RUGGLES and F. KUHLMANN.

The purpose of the experiment was to determine the accuracy in judging the relative sizes of two squares, *e. g.*, when they were (1) at the same, and (2) at different, distances, and how this depended on the several factors entering into the judgment of distance. Two methods were employed. In the apparatus of the first, the subject saw one square through a double convex lens, and immediately after chose one that seemed its equal from a series presented simultaneously. The square seen through the lens was set for three different accommodation distances, one, two and three meters, determined from the focal length of the lens and the distance between lens and square. In the second method the apparatus consisted of two movable cars in a dark room, with inside lights illuminating square openings at their ends. Distances from the subject of from one to ten meters were used. The car lights were turned on in immediate succession. Their intensity could be varied at will. In both methods the objective factors entering in judging the distance of one of the squares seen can be reduced to accommodation and convergence. The main results for both methods, so far, show a relatively very great influence of purely subjective factors in the judgment of distance, and hence of the relative sizes, when only accommodation and convergence entered. In extreme instances, in the latter method, the subject might judge the two lights to be at the same distance when they were distant one and ten meters, respectively.

Some Experiments on the Localization of Sound: DANIEL STARCH.

The apparent variation of intensity and of distance of a sound uniform in intensity and distance with change in direction, was determined by finding the threshold of hearing for a series of directions level with the ears, 15° apart, passing from front around on the right to the back. The source of sound was one meter from the observer. The experiments show that the threshold is lowest on the side, 90° right, and gradually rises in passing toward the front or toward the back. Consequently sensitivity is keenest on the side. A sound passing from in front or from the back toward the side would seem gradually to become louder, reaching its maximum at 90° right. This change in intensity with change in direction is an

essential datum for the localization of sound. Similarly the discrimination for pitch and for intensity was tested. The experiments show that the ability to discriminate between intensity of sound is the same for all directions. But pitch discrimination is poorest at the side. The difference limen for three well-trained observers was 1.4 v. d. at the side, 8 v. d. in front, and 1 v. d. in the back. The poorer discrimination at the side may be due to the fact that the ear catches more overtones when the source of sound is on the side. This may be confusing and consequently cause poorer discrimination. Another series of experiments in which a variety of stimuli were used demonstrated that the richer and more complex a sound is the more accurately it can be localized. It is very difficult to localize an approximately pure tone. The estimation of angular differences between directions was tested. Small angles are overestimated in front and underestimated at the side. We overestimate in front probably because we can discriminate between directions more accurately than we think we can, and we underestimate on the side because we do not discriminate between directions as accurately as we *naïvely* suppose.

Color Perception of Certain Animals: S. S. COLVIN.

During the year 1904-05 a series of experiments were conducted by the department of psychology at the University of Illinois for the purpose of gaining some facts in regard to the color perception of certain higher animals. The animals tested were three dogs, a cat and a squirrel. The animals were tested in the first place with receptacles containing food and alike in every respect except in color. Only one receptacle could be opened, however, and the food obtained. This receptacle was painted a standard red and was kept constantly through the first series of tests. Other colors used and varied from time to time were blue, green, yellow, orange, violet, red orange, red red orange and two reds, one being just observably different from the standard red in saturation. Dog No. 1 showed the greatest number of right choices, but with all the animals the curve was far above expectancy. Dog No. 3, the cat and the squirrel were lowest. The animals showed the greatest ability to distinguish between red and blue, and red and yellow. As the variable colors approached red the discrimination fell off, but never was as low as fifty per cent. even with the red just observably different from the standard red. The most significant results were obtained in a series of experiments in which the standard red was kept constant but attached to various receptacles from day to day, and the animal was required to select the receptacles when they appeared in a

variety of forms, and with often only a strip of color or a flag bearing the color. The results seem to show that the animals tested in this experiment (two dogs and the kitten) had a rudimentary ability to form abstract ideas, an ability that has often been denied by animal psychologists.

ARTHUR O. LOVEJOY,
Secretary.

WASHINGTON UNIVERSITY.

REVIEWS AND ABSTRACTS OF LITERATURE

On Kant's Reply to Hume. ARTHUR LOVEJOY. *Archiv für Geschichte der Philosophie*, Band XIX., Heft 3, 1906, pp. 380-407.

This is an important and illuminating analysis of Kant's argument for the *a priori* necessity of the principle of causation. The criticism of the argument as set forth in the 'Second Analogy' is prefaced by an account of its historical antecedents. Professor Lovejoy shows that Leibniz and Wolff were both aware of the sceptical objections which Hume later urged against the necessary universality and invariability of the causal nexus, so that in view of their dealing with the question, Kant's sharp antithesis between 'criticism' and 'dogmatism' loses much of its point. Leibniz expressly states that this principle can not be based on that of contradiction, but holds that its practical necessity and its repeated empirical verification afford it sufficient justification, in spite of the absence of any strictly logical proof. And Wolff adduces an argument in its support which anticipates essentially Kant's own transcendental proof. The sole criterion of reality, Wolff asserts, rests upon the presence of a definite order in the changes of things, which the real world exhibits, but the dream world lacks. Hence, without the principle of sufficient reason, there can be no truth. This is also the backbone of Kant's argument that causality is a necessary condition of all possible experience having objective validity.

Kant clothes Wolff's argument in technical phraseology. But he also blends with it a contribution of his own, whose exact relations to the main argument he does not carefully distinguish. Taking his point of departure from the antithesis of the psychological process involved in perception, on one hand, and the objective meaning or epistemological reference of this process, on the other, he describes the elements of the former as always successive, while the moments of the latter may be either actually successive, as when we watch a ship moving down-stream, or actually coexistent, as when we successively apprehend the parts of a house. How is it possible to distinguish successive apprehensions meaning a permanent object from successive apprehensions meaning an objective event? Kant's answer is that the permanent may be perceived in any order, but that a change in the object determines an irreversible sequence of perceptions. Subjective change is thus distinguished from objective change

by the fact that the latter presupposes a rule according to which the change necessarily occurs.

Professor Lovejoy shows that this argument involves a double confusion. First, there is an ambiguity in the notion of subjectivity. In Wolff's argument, and here and there in Kant's involved presentation, the antithesis subjective-objective lies wholly *within* the realm of objects perceived, the antithetical poles being objects or events as perceived with objective validity, and objects or events as perceived in dreams and illusions. In Kant's own contribution to the argument the antithesis is not *within* the realm of objects, but between the whole realm of perceived objects, real or illusory, on one hand, and the psychological processes involved in their apprehension, on the other. The order of the psychological processes, while not identical with the order of the objects known by means of them, is equally objective. Psychology seeks to assign these processes as definite a place in the caused series of changes within the organism as the objects themselves may find in the caused series outside the organism.

The second confusion lies in the conclusion that Kant attempts to draw, making the argument, in Professor Lovejoy's words, 'one of the most spectacular examples of *non-sequitur* to be found in the history of philosophy.' For the rule that Kant describes as leading us to distinguish between a series of perceptions determined by changes in the perceiving organism, and a series of perceptions determined by changes in the object, is that in each *single* instance of the latter the succession is *irreversible*. But the principle of causation demands a *uniformity* of succession in *repeated* instances. It is easy to see that the two 'rules' are entirely distinct. Kant jumps from the irreversibility of a sequence in a particular case to the idea of the necessary uniformity of that sequence in all cases in which the same kind of an event appears as antecedent.

Kant's peculiar contribution is thus, in Professor Lovejoy's opinion, quite irrelevant to Hume's scepticism. The main argument itself would be valid if causal connection were the sole test of objectivity. The argument would then be that any principle employed as the sole criterion for distinguishing subjective illusion from objectively valid judgments of perception, must necessarily be true *a priori* of all possible (objective) experience. Professor Lovejoy maintains that a uniform causal order is not the sole test of objectivity. An unmitigated miracle would be recognized as objective if the vivid perception of it were corroborated by the perception of other men; that is, objectivity and causal connection are not interchangeable terms. What Kant assumes as the supreme criterion of objectivity is a convenient but not exclusive rule "bred of an illogical but natural habit of expecting nature to repeat herself, and encouraged by past success in prophecies based upon that expectation. That is to say that there is nothing in the argument which in any way replies to Hume."

It occurs to the present reviewer to question the independence of the two criteria of objectivity recognized by Professor Lovejoy. Does not the

criterion of corroboration in the last analysis rest upon the criterion of causal connection? We believe that several observers are less likely to be deluded than one, because if the object really were there, it would causally evoke corresponding perceptions in the observers, while if it were not there, the presence of so many illusions would demand the coincidence of an unusual number of exceptional subjective conditions in different observers, all operating causally to produce the same result. But if no causal connections are admitted, this consideration entirely loses its force. There is, then, no reason why *A* and *B* should under similar conditions perceive the same world.

DAVID F. SWENSON.

COLUMBIA UNIVERSITY.

JOURNALS AND NEW BOOKS

REVUE PHILOSOPHIQUE. January, 1906. *L'effort* (pp. 1-14): B. BOURDON. - Effort is only the felt intensity of muscular contraction; all forms of mental effort are so reducible. Reactions to pain and to effort are often alike because pain is represented as an obstacle to be overcome. The notion of the externality of the world can not be derived from feelings of effort, even when resistance and touch are used to help out the hypothesis. *De l'avarice* (pp. 15-40): R. DE FURSAC. - Clinical and historical studies of misers. Avarice distinguished from cupidity and parsimony by being love for property in itself. The collecting mania is not a mark of avarice. But low imaginative power, combined with good memory, and a low judgment power are uniformly present. An inability to form abstract notions, absence of feelings and love of solitude are further common characteristics. *La religion du doute* (pp. 41-62): G. PRÉVOST. - Doubt is a vital function in active, progressive life; it is the means of improving the soul and hastening its evolution toward the Infinite. Morality and justice may both be based upon such a theory of doubt. *Revue générale: La philosophie du droit au point de vue sociologique* (pp. 63-87): G. RICHARD. - A review and criticism of the following works is incorporated in this article: Posada, *Teorias politicas*; Jorro, *Socialismo y reforma social*; Levi, *Per un programme di filosofia del diritto*; Loria, *Verso la giustizia sociale*; Miceli, *Le fonti del diritto dal punto di vista psichico-sociale*; Jellinek, *L'état moderne et son droit* (original German); Carle, *La filosofia del diritto nello Stato moderno*; Stein, *Die soziale Frage im Lichte der Philosophie*; Del Vecchio, *I presupposti filosofici della nozione del diritto*. *Analyses et comptes rendus*: Schultz, *Die Bilder von der Materie*; ABEL REY. Jerusalem, *Gedanken und Denker*: L. ARRÉAT. Philippe et Paul-Boncour, *Les anomalies mentales chez les écoliers*: PH. CHASLIN. Pfister, *Die Willensfreiheit*: LÉON POITEVIN. Ingenieros, *La simulacion en la lucha por la vida*: J. PÉRRÈS. Finot, *Le préjugé des races*: HENRI JOLY. E. Durkheim et ses collaborateurs, *L'année sociologique*: G. BELOT. *Sociological papers*: JANKELEVITZ. Wallaschek, *Psychologie und Pathologie der Vorstellung*: CHARLES LALO. Rollo, *Storia delle idee estetiche in Italia*: CHARLES LALO. *Revue des périodiques étrangers*.

- Baumann, Julius. *Anti-Kant. Mit Benutzung von Tiedemanns 'Theätet' und auf Grund jetziger Wissenschaft.* Gotha: F. A. Perthes. 1905. Pp. vi + 195. 4 M.
- Fanciulli, Giuseppe. *La coscienza estetica.* Turin: Fratelli Bocca. 1906. Pp. 319.
- Huber, Sebastian. *Grundzüge der Logik und Noëtik in Geiste deshl. Thomas von Aquin. Mit Kirklicher Druckerlaubniss.* Paderborn: Ferdinand Schöningh. 1906. Pp. viii + 168.

NOTES AND NEWS

THE minister of public instruction in Italy has issued a list of questions formulated by the commission for the reform of secondary education. Training in philosophy is remembered in the following questions, which we copy from the *Revista Filosofica*. (1) What is the educative function and value of philosophy in the different types of secondary schools? (2) Through how many years, and in which years, should such instruction be imparted? (3) In what order should subjects in philosophy be studied? (4) Is it feasible, as some have maintained, to precede the analytic study of the subject-matter of philosophy with a synthetic outline of the general problems of the world and of man? (5) Would it not be advisable in teaching philosophy to give more importance to the reading of selected portions of the philosophical classics, ancient and modern, and to prepare good collections for reading? (6) What arrangement will assure to the study of philosophy the greatest profit from the study of the sciences of history and of ancient and modern literature? (7) Ought the study of philosophy, as now pursued, be increased by the addition of other subjects, such as esthetics and the history of philosophy? Ought any of the subjects taught at present by the professor of philosophy be transferred to other departments, such as the department of history, of mathematics, of natural science? (8) How to provide that students may not be graduated, as they are at present, from the secondary schools for general culture without any notion of the economic and social mechanism of modern life? Remarks and proposals.

A NEW course in pedagogy will be established at Swarthmore College next year. The work will be in charge of Dr. Martin G. Brumbaugh, professor of pedagogy, of the University of Pennsylvania, Professor Edward B. Rawson, principal of the Friends' Seminary, of New York City, and Dr. Bird T. Baldwin, professor of psychology at the West Chester State Normal School.

PROFESSOR H. H. HORNE has been granted a Sabbatical year of leave by Dartmouth College, which he will spend abroad in study and travel. His place will be filled by Dr. Charles H. Johnston, of the State Normal School, in East Stroudsburg, Pa.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

G. PAPINI AND THE PRAGMATIST MOVEMENT IN ITALY

AMERICAN students have so long had the habit of turning to Germany for their philosophic inspiration, that they are only beginning to recognize the splendid psychological and philosophical activity with which France to-day is animated; and as for poor little Italy, few of them think it necessary even to learn to read her language. Meanwhile Italy is engaged in the throes of an intellectual *rinascimento* quite as vigorous as her political one. Her sons still class the things of thought somewhat too politically, making partizan capital, clerical or positivist, of every conquest or concession, but that is only the slow dying of a habit born in darker times. The ancient genius of her people is evidently unweakened, and the tendency to individualism that has always marked her is beginning to mark her again as strongly as ever, and nowhere more notably than in philosophy.

As an illustration, let me give a brief account of the aggressive movement in favor of 'pragmatism' which the monthly journal *Leonardo* (published at Florence, and now in its fourth year) is carrying on, with the youthful Giovanni Papini tipping the wedge of it as editor, and the scarcely less youthful names of Prezzolini, Vailati, Calderoni, Amendola and others, signing the more conspicuous articles. To one accustomed to the style of article that has usually discussed pragmatism, Deweyism, or radical empiricism, in this country, and more particularly in this JOURNAL, the Italian literature of the subject is a surprising, and to the present writer a refreshing, novelty. Our university seminaries (where so many bald-headed and bald-hearted young aspirants for the Ph.D. have all these years been accustomed to bore one another with the pedantry and technicality, formless, uncircumcised, unabashed and unrebuked, of their 'papers' and 'reports') are bearing at last the fruit that was to be expected, in an almost complete blunting of the literary sense in the more youthful philosophers of our land. Surely no other country could utter in the same number of months as badly written a philosophic mass as ours has published since Dewey's

'Studies in Logical Theory' came out. Germany is not 'in it' with us, in my estimation, for uncouthness of form.

In this Florentine band of Leonardists, on the other hand, we find, instead of heaviness, length and obscurity, lightness, clearness and brevity, with no lack of profundity or learning (quite the reverse, indeed), and a frolicsomeness and impertinence that wear the charm of youth and freedom. Signor Papini in particular has a real genius for cutting and untechnical phraseology. He can write descriptive literature, polychromatic with adjectives, like a decadent, and clear up a subject by drawing cold distinctions, like a scholastic. As he is the most enthusiastic pragmatist of them all (some of his colleagues make decided reservations) I will speak of him exclusively. He advertises a general work on the pragmatist movement as in press; but the February number of *Leonardo* and the last chapter of his just published volume, 'Il Crepuscolo dei Filosofi,'¹ give his program, and announce him as the most radical conceiver of pragmatism to be found anywhere.

The 'Crepuscolo' book calls itself in the preface a work of 'passion,' being a settling of the author's private accounts with several philosophers (Kant, Hegel, Schopenhauer, Comte, Spencer, Nietzsche) and a clearing of his mental tables from their impeding rubbish, so as to leave him the freer for constructive business. I will only say of the critical chapters that they are strongly thought and pungently written. The author hits essentials, but he doesn't always cover everything, and more than he has said, either for or against, remains to be said about both Kant and Hegel. It is the preface and the final chapter of the book that contain the passion. The 'good rid-dance,' which is Papini's cry of farewell to the past of philosophy, seems most of all to signify for him a good-by to its exaggerated respect for universals and abstractions. Reality for him *exists* only *distributively*, in the particular concretes of experience. Abstracts and universals are only instruments by which we meet and handle these latter.

In an article in *Leonardo* last year,² he states the whole pragmatic scope and program very neatly. Fundamentally, he says, it means an *unstiffening* of all our theories and beliefs by attending to their *instrumental* value. It incorporates and harmonizes various ancient tendencies, as

1. *Nominalism*, by which he means the *appeal to the particular*. Pragmatism is nominalistic not only in regard to words, but in regard to phrases and to theories.

2. *Utilitarianism*, or the emphasizing of practical aspects and problems.

¹ Milano: Società Editrice Lombarda.

² April, 1905, p. 45.

3. *Positivism*, or the disdain of verbal and useless questions.

4. *Kantism*, in so far as Kant affirms the primacy of practical reason.

5. *Voluntarism*, in the psychological sense, of the intellect's secondary position.

6. *Fideism*, in its attitude towards religious questions.

Pragmatism, according to Papini, is thus only a collection of attitudes and methods, and its chief characteristic is its armed neutrality in the midst of doctrines. It is like a corridor in a hotel, from which a hundred doors open into a hundred chambers. In one you may see a man on his knees praying to regain his faith; in another a desk at which sits some one eager to destroy all metaphysics; in a third a laboratory with an investigator looking for new footholds by which to advance upon the future. But the corridor belongs to all, and all must pass there. Pragmatism, in short, is a great *corridor-theory*.

In the 'Crepuscolo' Sig. Papini says that what pragmatism has always meant for him is the necessity of enlarging our means of action, the vanity of the universal as such, the bringing of our spiritual powers into use, and the need of making the world over instead of merely standing by and contemplating it. It *inspires human activity*, in short, differently from other philosophies.

"The common denominator to which all the forms of human life can be reduced is this: *the quest of instruments to act with*, or, in other words, *the quest of power*."

By 'action' Sig. Papini means any change into which man enters as a conscious cause, whether it be to add to existing reality or to subtract from it. Art, science, religion and philosophy all are but so many instruments of change. Art changes things for our vision; religion for our vital tone and hope; science tells us how to change the course of nature and our conduct towards it; philosophy is only a more penetrating science. Tristan and Isolde, Paradise, Atoms, Substance, neither of them copies anything real; all are creations placed above reality, to transform, build out and interpret it in the interests of human need or passion. Instead of affirming with the positivists that we must render the ideal world as similar as possible to the actual, Sig. Papini emphasizes our duty of turning the actual world into as close a copy of the ideal as it will let us. The various ideal worlds are here because the real world fails to satisfy us. They are more adapted to us, realize more potently our desires. We should treat them as *ideal limits* towards which reality must evermore be approximated.

All our ideal instruments are as yet imperfect. Arts, religions, sciences, philosophies, have their vices and defects, and the worst

of all are those of the philosophies. But philosophy can be regenerated. Since change and action are the most general ideals possible, philosophy can become a '*pragmatic*' in the strict sense of the word, meaning a *general theory of human action*. Ends and means can here be studied together, in the abstractest and most inclusive way, so that philosophy can resolve itself into a comparative discussion of all the possible programs for man's life when man is once for all regarded as a creative being.

As such, man becomes a kind of god, and where are we to draw his limits? In an article called 'From Man to God' in the *Leonardo* for last February Sig. Papini lets his imagination work at stretching the limits. His attempt will be called Promethean or bullfroggian, according to the temper of the reader. It has decidedly an element of literary swagger and conscious impertinence, but I confess that I am unable to treat it otherwise than respectfully. Why should not the divine attributes of omniscience and omnipotence be used by man as the pole-stars by which he may methodically lay his own course? Why should not divine *rest* be his own ultimate goal, rest attained by an activity in the end so immense that all desires are satisfied, and no more action necessary? The unexplored powers and relations of man, both physical and mental, are certainly enormous; why should we impose limits on them *a priori*? And, if not, why are the most utopian programs not in order?

The program of a Man-God is surely one of the possible great type-programs of philosophy. I myself have been slow in coming into the full inwardness of pragmatism. Schiller's writings and those of Dewey and his school have taught me some of its wider reaches; and in the writings of this youthful Italian, clear in spite of all their brevity and audacity, I find not only a way in which our English views might be developed farther with consistency—at least so it appears to me—but also a tone of feeling well fitted to rally devotees and to make of pragmatism a new militant form of religious or quasi-religious philosophy.

The supreme merit of it in these adventurous regions is that it can never grow doctrinarian in advance of verification, or make dogmatic pretensions.

When, as one looks back from the actual world that one believes and lives and moves in, and tries to understand how the knowledge of its content and structure ever grew up step by step in our minds, one has to confess that objective and subjective influences have so mingled in the process that it is impossible now to disentangle their contributions or to give to either the primacy. When a man has walked a mile, who can say whether his right or his left leg is the more responsible? and who can say whether the water or the clay

is most to be thanked for the evolution of the bed of an existing river? Something like this I understand to be Messrs. Dewey's and Schiller's contention about 'truth.' The subjective and objective factors of any presently functioning body of it are lost in the night of time and indistinguishable. Only the way in which we see a new truth develop shows us that, by analogy, subjective factors must always have been active. Subjective factors thus are potent, and their effects remain. They are in *some* degree creative, then; and this carries with it, it seems to me, the admissibility of the entire Italian pragmatistic program. But, be the God-Man part of it sound or foolish, the Italian pragmatists are an extraordinarily well-informed and gifted, and above all an extraordinarily free and spirited and unpedantic, group of writers.

WILLIAM JAMES.

HARVARD UNIVERSITY.

THE DETECTION OF COLOR-BLINDNESS¹

AT the recent Cambridge meeting of the American Psychological Association, in the course of a discussion of color vision and especially of color-blindness, one of the speakers made the claim that a person deficient in color sense could be trained in a short time so that he could pass successfully the Holmgren test for color-blindness, which in some form or other is the one usually employed where it is practically important to determine defective color vision. If this is the case, and there are numerous evidences in the literature of color-blindness substantiating the claim, then it would seem to be desirable and important to discover a test which can be applied at once expeditiously and with greater certainty of detection. Forty or more tests of a scientific or practical character have been devised. All of these methods are based on the naming or matching of colors, the confusion of colors being in fact the basis of all of them.

Professor Cattell, in various discussions of the time of perception as a measure of differences in sensations, has suggested the value of this method in determining sense deficiencies. So far as I know, no application of the method to testing color vision has been made except in the experiments and results to be reported here. They form part of a general investigation into the application of this method to the measurement of differences in sensations.²

¹ Paper read at the Princeton meeting of the Section of Anthropology and Psychology of the New York Academy of Sciences, in conjunction with the New York Section of the American Psychological Association.

² To be published shortly in the *Archives of Philosophy, Psychology and Scientific Methods*.

It may well happen that a color-blind person may be able to pass the Holmgren test or some other naming or matching test without confusion of colors and also without showing such hesitancy that it would be safe to conclude from it that there is a defective color sense. If, however, the one tested is red-green blind, it will take him a longer time to distinguish the reds and greens than the blues and yellows, and, on the other hand, if he is blue-yellow blind, the reverse will be the case. The person of normal color vision, as experiments have shown, takes about as long to distinguish one pair of colors as the other. If, then, we have a measure of the time of perceiving differences between each of these pairs of colors, we have an indication of the nature of the color sense. Should the time be markedly longer for one pair than for the other, it is almost certain that there is defective color vision or color-blindness. As a matter of fact, a test based on the time of perception would seem to approach more nearly the actual conditions to be met where it is necessary for practical reasons to determine defects than methods based merely on the inability to distinguish colors.

In the application of the method it is possible by the use of colored lights or the lanterns actually found in the railway service to simulate these conditions exactly. The time required for this mode of procedure makes the application cumbersome. As is well known, it is necessary to use a variety of reds and greens, for the hues, tints or shades that are confused or are difficult to distinguish vary widely in color-blind persons. The following method used in this study seemed to be entirely satisfactory. One hundred and thirty-two cards were prepared, on sixty-six of which were mounted three blues and three yellows in equal numbers, and on the remainder, three reds and three greens. The colored surfaces, the Milton-Bradley papers being used, were 3 cm. square. With pigments it would be possible to secure greater purity in color-tone and one could define the relations of the colors more exactly. Such surfaces are, however, difficult to prepare and some of the pigments quickly rub off in handling. In each color the Milton-Bradley standard together with one tint and one shade was used. These were selected so that the person of normal color vision could distinguish them as rapidly as he could distribute the cards. Numerous tests on such persons showed that for them the times of distribution were almost exactly equal. A second set of reds was also prepared, made up of the Milton-Bradley orange-red series. The method of giving the test was to place before the subject one each of the blues and yellows, or of the reds and greens, arranged in a fixed order. The time required to distribute the sixty cards, first the blues and yellows and then the

reds and greens, and so on alternately, was taken with a stop-watch. A fixed order was adopted to prevent interference in associations, which would have lengthened the time without giving any new information as to color vision. Alternation provides for equalizing practise effects in distribution.

Experiments were made on five color-blind persons, ranging in degree of deficiency from what would perhaps be termed a reduced color sense to extreme confusion of the reds and greens. Ten series were taken on each subject with the standard reds and greens and the standard blues and yellows, and five with the orange-reds substituted for the standard reds, except in the case of one subject. There were, thus, 1,800 reactions to color by each of four subjects and 1,200 by one.

The results of the experiments go clearly to show the validity and value of the test. The person of normal color vision, as stated above, takes no longer to distribute the reds and greens than the blues and yellows. The color-blind person takes much longer, approximately 12 seconds, when the time of distribution for the blues and yellows is approximately 40 seconds. More specifically, the averages of the gross differences with the standard red series for the five subjects are 12.2, 13.7, 15.4, 16.6 and 6.1 seconds, respectively, with the average difference for the group 12 seconds. For the orange-red series the differences are 11.7, 13.0, 7.4 and 18.8 seconds, with an average of 12.7 seconds. Expressed in terms of percentage of increase in the times of distribution of the reds and greens over the blues and yellows, the median differences in the first series are 25, 35, 43.5, 21.5 and 10.5 per cent., and for the group 24.5 per cent. In the second, or orange-red, series these values are 33, 42, 24 and 44 per cent., and for the group 33.5 per cent.

On a basis of these results it can be safely said that if a person takes markedly longer to distribute one pair of colors than the other, there is evidence of a reduction in color sense or of color-blindness. With a larger number of cases on individuals of normal color vision and on color-blind persons these limits can be definitely fixed. This will, then, make possible a convenient method of measuring the color sense. It is one of the valuable features of the method that it furnishes a means of measuring rather exactly individual differences in color perception, and not only the fact of color deficiency, but the degree of the deficiency as well. Various tests on persons of supposedly normal color vision show this and give ground for the belief that a reduction in color sense is more common than is usually supposed and that there are all degrees of ability to discriminate colors, ranging from the highest discriminativeness down through

the reduced color sense to the extreme forms of color-blindness. It is, I think, mainly held that the color-blind form a separate species marked off from those of normal color vision, but it seems probable that this is not the case, but that the color-blind form rather the lower end of a normal distribution curve.

This method combines the methods based on the confusion of colors with a measure of the time of perception. This becomes apparent when one takes into consideration the errors made. Wherever the differences in time of distribution are small this is due to the errors and confusions in the reds and greens which would disclose a defect. It is important to note, however, that in most of the standard red series no errors occurred, and in practically all the orange-red series there were no errors. Moreover, the colors could be distinguished if sufficient time was taken in order to secure accuracy, for on running over the results of a distribution errors were detected by differences in brightness, and particularly so when the colors were side by side.

The test is of such a character that it can be given rapidly and by any one. If in the first series the time differences do not appear, the test need not be continued. If they do appear, five or more series should give a sufficiently accurate measure for all practical purposes. Improvements in the test can be made by defining the colors more exactly with reference to each other, as suggested above. In order that equal differences for consciousness be obtained throughout, all that it would be necessary to do would be to apply the method of the time of perception. The time of discriminating the standard blue and the standard yellow and the corresponding standard red and green is about equal. We can determine a difference for consciousness between blue and a blue tint which will be equal to the difference between red and a red tint, and so on for all desired combinations. The preparation of such a series of colors would give the conditions for the very best application of this method.

VIVIAN A. C. HENMON.

COLUMBIA UNIVERSITY.

DISCUSSION

WHY SOLIPSISM IS REJECTED

AFTER Mr. Schiller's recent pithy presentation of some of the dangers with which solipsism confronts the absolute idealist,¹ it may appear superfluous to discuss the general grounds for the rejection of solipsistic hypotheses. There is a further needlessness, ap-

¹ This JOURNAL, Vol. III., p. 85.

parently, in that virtually nobody is really a solipsist, so that every attack upon the theory is a battle with windmills. Nevertheless, there seems to be one good reason for delving into the matter afresh. For at bottom we find in the conception of solipsism a theory of one-to-one correspondence which serves to account for the existence of other selves within my—the solipsist's—experience. And just in this one-to-one correspondence lurks a fallacy whose seriousness seems little to be recognized.

Before turning to this point a distinction must be drawn between two kinds of solipsism, the positive, absolutistic species and the rather negative sort which is content with declaring that we have no true *proof* of the existence of other selves. Each kind deserves a special criticism; the former puts the critic on the defensive, the latter gives him the offense. Against out-and-out dogmatic solipsism we can only raise the protest of facts; in reply to negative solipsism we are given the responsibility of searching out possible disproofs. It is clear that a refutation of solipsism must start with an attack on the more radical and positive species.

Absolutistic solipsism claims that I alone am all reality. It denies every kind of objectivism, not merely objective idealism, whose incompatibility with it Mr. Schiller has shown. It is then confronted with the task of showing what relation those systems within my all-inclusive system bear to the whole of which they are, by hypothesis, but parts. And, as Mr. Schiller puts it, "The full atrocity of solipsism only reveals itself when it is perceived that solipsists may exist in the plural and attempt to conceive *me* as parts of *them*." To this point, however, the consistent solipsist would retort as follows: "I do not deny that I find with *my* universe, the only real one, systems which I label 'fellow citizens' and which present the peculiarity of claiming for themselves individually the same all-inclusive uniqueness which I know is my own and nobody else's. But it is one thing to find solipsistic philosophers within my world and a very different thing to admit that the contentions of those thinkers are anything more than occurrences within my universe. If the thinkers themselves are only phases or moments in my world, how can their beliefs be anything else?"

This retort has not been adequately met by Mr. Schiller's criticism; for, unless I am very much mistaken, he has confused 'real solipsist' with 'believer in solipsism' or 'thing or system declaring in favor of solipsism.' We must avoid identifying solipsism, a form of belief, with solipsism, a real state of affairs. The consistent solipsist insists upon this most strenuously, for the distinction is his court of last appeal. Upon this distinction the solipsist bases his belief, rarely, if ever, clearly uttered, that in an all-inclusive system

peculiarities of the parts are (a) either peculiarities of the whole *and nothing else*, or (b) representations of peculiarities of the whole, *and nothing but representations*. It is this belief into which we must probe, if we wish to understand all the implications of solipsism.

Now, the most remarkable peculiarity of the parts of the solipsistic system is that they claim to be independent of this system. We shall not bother at present about the detailed content of this claim; we shall notice merely its type, which may be described as follows: in an all-inclusive system a part of this system may be characterized by an *intention* whose content can not possibly be, without self-contradiction, the content of an intention of the system as a whole. To put this concretely, we find in an assumedly all-inclusive solipsistic system certain parts which *by intention* contain parts within themselves which are not at the same time parts of that solipsistic system. The solipsist can not deny that other individuals,—parts of his experience,—*claim* to be 'the whole thing' by themselves, claim the right of reducing him to a part of themselves. The solipsist attempts to explain their *intentions* as really nothing more than so many experiences of his; by this device he escapes, in his own mind, the full force of those insistent claims. But we must proceed cautiously in giving ear to this new plea. Looking again at the typical mark of the individual parts or subsystems, we find implied either (a) that the part's intention is an intention of the whole, so that the whole claims to contain in its own parts certain subparts which are themselves not merely within the whole, or (b) that the part's intention is, as such, something essentially different from any possible intention of the whole. Worded thus, the first alternative is a pure contradiction, so that we are forced to accept the second unless we are willing to throw all scruples to the winds.

How is it that the solipsist has failed to see the absurdity of his defense? I should say that he has done so because of his confusion of intention with awareness of an intention, on the one hand, and because of a fallaciously facile divorcement of intention as act of will from intention as the meaning content of such volition. If I say that *A*'s act of will is my experience, I seem to mean, according to conventional solipsism, that the willing done by *A* is done by me. But this is manifestly not the case; as solipsist, I could not possibly mean this, inasmuch as that would involve the downfall of my solipsistic universe; for what *A* wills, intends, means, is that he is something more than a fragment in my experience-system. If I were to admit this, I would have to admit the essentially self-contradictory character of my universe, if I wished still to retain that universe with its all-inclusiveness. Feeling the difficulties in which such a defense ends, the solipsist turns to the only other hypothesis, *vis.*,

that *A*'s very intention, meaning-act and meaning-content combined, is not really a peculiarity of the part of my system I call *A*, but is a peculiarity due somehow to my system as a whole. The part *A* does not will (mean something) independently, but does so simply as a part of my solipsistic universe. But this does not help matters much, for here, too, we discover the part *claims* to be something which the whole denies it can be *even in intention*. Thus a pure contradiction results: the part *A* claims that its own very claim (intention) is independent of my experience-system, while this latter insists that this new claim in turn is dependent upon the whole system; and this process of mutual recrimination now appears to involve the fatal infinite regress.

The dilemma reduces to this, then: the intention of a part is, with reference to its position in the whole, not a true intention but an experience of some other sort, so that it is to the part something that it can not be to the whole; and in settling the respective claims of the part and the whole an insoluble regress—indicating a latent contradiction—is set up as soon as the logical intention of the former is reduced to some other type of experience for the whole, and *vice versa*, for we have no criterion by which we can judge the priority of claims made by the part and the whole.

Throughout these remarks, which, I fear, reek of something suspiciously like dialectic, we have not stated the case any more disadvantageously than the solipsistic defense itself permits. The admission that there are real intentions of other orders than my own 'proper' ones involves me, the solipsist, in the further fatal confession that there are phases in the parts of my system which are in direct conflict with the whole import of the whole itself. And, on the other hand, any denial that there are really intentions of other orders brings with it the equally fatal admission that things are not what they are experienced as, *e. g.*, that what is genuinely experienced as the meaning or intention of another individual is not only not a property or expression of such an individual, but is not even so much as an intention at all. What I feel with startling regularity to be the expression of another's opinion is *not even an opinion*, in so far as I do not myself hold this same something to be my opinion. What seem to be conflicting views, then, are not views at all.

We are thus brought face to face with the general problem forming the *causa belli* for idealism and pragmatism: if things are not precisely what they are experienced as, if, in short, they change in significance, if experience is self-corrective, must we not conclude that experience, as such, is not ultimate nor all-inclusive in the strict sense? Can we say that experience at any given cross-section is all that it can become? Now, we are not going to attack this huge issue,

involving so much of little interest to solipsistic problems. Only one concrete aspect of the matter is of vital importance here; the fact that, in the course of experience, situations arise in which the apparently *bona fide* and objectively real intentions of other individuals are transformed by criticism into mere modes of the solipsist's own experience, shows clearly that there is no wisdom in saying dogmatically that intentions, as such, are ever to be taken at face value. The solipsist, in short, has no positive reason for believing that only his intentions are exempt from transformation. Indeed, he has direct proof of the opposite in the common phenomenon of 'changing his mind.' For, let us say, he meant one thing yesterday, but to-day believes the opposite to be true; intentions of the first order may transform, then, so as to cease being intentions at all. Where, then, the unique security of the opinion that he is the absolute? Neither intuition nor argument can go bond for it.

There is no help to be found in the idealist's distinction between the phenomenal and the transcendental selves. It will not do to say that the intentions of the first order are peculiarities of the phenomenal self alone; for in the first place this very distinction is itself only intended, or, more exactly, is given *through* an intention. We can not, therefore, separate its truthfulness from the way in which it is experienced, inasmuch as we are by hypothesis making truth a function of experience. More serious in its implications, though, is the acceptance of two phases in the solipsistic self. For now contradiction and conflict are lugged in with cool deliberateness. The true—transcendental—self reappears within itself, but under certain peculiar limitations, commonly met with in historical incarnations. What can the solipsist do if his phenomenal self claims to be 'the real thing'? Shall he declare that this intention is really his own? Or shall he say that in reality he doesn't mean what he says? The dilemma needs no comment.

Viewing experience in its dynamic character, we finally discern a kind of relation between it and its parts which renders the catalysm complete. At a given moment a part can claim to have its own unique experiences, which the whole, so long as it is conceived as conscious, has not; and that part can change the intention of the whole by adding experiences ('symbols' of its own unique ones) to the whole's stock. Thus A can convince me that he is thinking of something I am ignorant of; he invites me to guess, and tells me my guess is wrong, supplementing this with a true account of what he had in mind. So we have a contradictory situation for the solipsist! a part of an all-inclusive and conscious system 'contains' something not contained *even representatively* in the system itself. It is because we are all rationalists, in the last analysis, that we reject

instinctively as hopelessly untenable every hypothesis scented with solipsism. For solipsism inhibits every empirically demanded—*i. e.*, self-consistent—theory of experience.

After this endeavor to show the irrationality of absolutistic solipsism, we may well notice the sad plight in which it leaves objective idealism. Let us waive the issue raised in Mr. Schiller's article already referred to; let us refrain from proving the impossibility of conceiving a solipsist in an objective ideal world. If we make the idealist assume an objective, solipsistic absolute, it will be child's play to drive both him and his toy into corners, quagmires and other quandaries. Suppose we set no traps, then, but merely criticize the bearing that a chastened pluralism has upon the relation which some noted idealists conceive to exist between the absolute and the individual. To say that the latter reflects the former so that there is a curious one-to-one correspondence between the two systems is equivalent to saying that the individual's intentions are true correspondents to intentions in the absolute; accepting realistic pluralism, this would mean obviously that the absolute is self-contradictory. The idealist with this correspondence theory prefers, I imagine, either individualistic or absolutistic (objective) solipsism, in either of which cases he accepts the fallacies already discussed. The reason why the one-to-one correspondence theory seems tenable is to be found in the venerable confusion of real intention (volition, meaning-act) with awareness of an intention. It may well be that the supposed absolute is in some uncanny fashion aware of all individual opinions, so that these are doubly present, once cognitively in the whole and once volitionally in the various parts. I fancy that some such interpretation, laying all the stress upon a cognitive correspondence, is the favorite one. But as soon as we set up a true structural and content correspondence, we reduce the absolute to a vast protoplasm, burdened with inner contradictions and blind conflicts,—a pathetic Titan smitten with locomotor ataxia by its own warring members.

An illustration of this point: I believe I am independent, in certain of my activities, from certain cosmic influences at certain times.

Now suppose we assume that I am laboring under an illusion, being really determined in every act by every event of every order in the universe. In what sense is my *belief*, qua belief, a correspondent to something in the absolute? The content-meaning, *viz.*, my freedom, is not the content-meaning of any belief-attitude in the absolute; which means that the correlation between meaning and attitude in me is positively misrepresentative of the correlation of the same 'things' in the absolute. I feel that I am free, but the absolute does not feel that way. It will prove a fruitful line of

criticism to investigate the type of error here involved, for the whole matter has a vital bearing upon the general concept and use of 'one-to-one correspondence.' Professor Woodbridge's suggestion—unpublished, but deserving of print—that there is a fallacy underlying the mathematical notion of 'one-to-one correspondence' between two infinite series, of which the second is a part of the first, points, I believe, to precisely the same sort of difficulties which we have tried to hint at above in the case of absolute idealism. And the whole phenomenon reappears in every consistent species of solipsism.

WALTER B. PITKIN.

COLUMBIA UNIVERSITY.

A REPLY TO MR. MARSHALL

I AM glad to have Mr. Marshall correct my unintentional misrepresentation of his views about the term 'feeling.'¹ I had stated that Mr. Marshall thought the term could be saved for technical service. To which Mr. Marshall replies: "I had intended, on the contrary, to indicate that I am convinced that it is not only desirable, but perfectly possible, to eliminate the word from our psychological vocabulary, and that this may be done without finding ourselves lacking adequate and expressive words to take its place." "What Professor Angell speaks of as my doctrine was intended to be merely a description of what is really meant by the term 'feeling' as it is employed in careful writing by psychologists whose words we must accept as authoritative and must treat with respect."

I was somewhat in doubt as to Mr. Marshall's purposes in the matter, for although he began his paper with a very explicit announcement that he was set for the overthrow of the term, the latter portion of his discussion apparently involved a less drastic course. A sentence or two from his first paper will perhaps explain my misunderstanding without detracting from the force of Mr. Marshall's later and more definite expression of his meaning:

"To be sure such a procedure as I thus recommend deprives us psychologists of a word we are all fond of—but in the end I am convinced that our generous sacrifice would tend to true advance." "The thesis, then, which I present for your consideration is this: that the experience which the psychologist *properly*² describes as feeling is a certain form of presentation . . ." "But as *under my view*,² feeling is less explicit than the empirical ego . . . etc."

These sentences will, I hope, suggest the grounds for my interpretation, even if they do not justify it.

¹ This JOURNAL, Vol. III., Nos. 2 and 7.

² Italics mine.

As to Mr. Marshall's raids upon the inner storehouses of the mind, the prosecuting attorney has, in view of the declaration of intentions on the part of the accused, entered a *nol. pros.*

JAMES R. ANGELL.

UNIVERSITY OF CHICAGO.

SOCIETIES

SECTION OF ANTHROPOLOGY AND PSYCHOLOGY OF THE NEW YORK ACADEMY OF SCIENCES

REPORT OF THE SECRETARY

A MEETING was held on April 23, 1906, in conjunction with the New York Branch of the American Psychological Association. The afternoon session was held in the psychological laboratory of Columbia University, and the evening session at the American Museum of Natural History. The following are abstracts of the papers read:

Esthetic Value of Lower Sense Qualities: W. B. PITKIN.

The reason for the low esthetic value of touch, temperature, taste and smell qualities may be found in the peculiarly weak imagery and, much more conspicuously, in the rapid disappearance of after-images. It is the power of after-imagery in the narrow sense of the persistence of a quality with relatively high intensity (compared to the original sensation's intensity) which determines whether or not the quality in question shall be called esthetic. The conspicuous fact about our judgments about lower sense qualities is that we are wholly at a loss, in most cases, to say whether they are esthetic or not; this difficulty is not connected with the low pleasure-pain values, but seems to be strictly an inability to pass any definite judgment whatsoever. It is not a question of being esthetically pleasing or esthetically displeasing, but rather of being contemplated at all. As all distinct judgment refers to a content which is not a pure sensation at the moment of judging, and as, furthermore, it is well established that those three quality-species which are exclusively used in the fine arts (*viz.*, visual, auditory and kinesthetic) are remarkably superior in after-imagery to all other species (for most persons), it seems fair to conclude that absence of strong after-imagery involves not so much a change or difference in pleasure-pain tone as it does a mere inhibition of judgment and, in cases of attempted judgment, mere inability to decide.

A Comparison of Mental Processes in the Horizontal and Vertical Positions of the Body: E. E. JONES.

The tests have been made for the most part in the psychological laboratory of Columbia University. The general plan has been to place the subject on a Mosso balance in the horizontal position and give him a series of tests which are duplicated in the vertical position. Change from one position to another was frequent enough to distribute equally what fatigue might occur, and the results were then statistically compared. In the discrimination of pitch the monochord and tuning forks were used, by the method of right and wrong cases. About fifty subjects were used, mostly university students, and a comparison of results shows a decided advantage for the vertical posture. The mean P. E. for the subjects tested in the horizontal posture is about one and one half times as great as the vertical P. E. Tactile discrimination was tested by the esthesiometer by the method of right and wrong cases. The results for eighteen subjects show a P. E. in the vertical position of the body one and one half times as great as the P. E. in the horizontal. In the adding tests subjects did quicker work in the horizontal position of the body and were about twenty per cent. more accurate. The average time of adding problems of theoretically equal difficulty in the horizontal position was 30.6 seconds; for the vertical 32.9 seconds. In the tapping tests enough experiments were made in each position to form good averages, and the subjects were timed for one hundred taps. For the fourteen subjects tested the average time for 100 taps in the horizontal position was 14.2 seconds, with an M. V. of 1.5. For the vertical position the average time was 13.6 seconds, with an M. V. of 1.59.

Colored After-images of Unperceived Peripheral Color Stimuli:

GRACE M. FERNALD.

In a series of experiments carried out by Dr. Baird¹ it was found that after-images were not aroused by the stimulation of the peripheral portions of the dark-adapted retina. Very decided after effects, however, were shown to exist and to be influential in determining the effects of succeeding color stimuli, unless sufficiently long rest intervals were allowed between stimulations. These fatigue effects were made the basis of an explanation of Hellpach's 'Gegenfarbige Zone,' *i. e.*, an extreme peripheral zone in which colors appeared in their complementary instead of their true color tone.² Very different results from those just described were obtained in our

¹ 'The Color Sensitivity of the Peripheral Retina,' published by the Carnegie Institute, May, 1905.

² *Philosophical Studies*, Vol. XV., pp. 524-554.

work on the light-adapted eye.³ After-images were perceived, almost without exception, as far out as any color could be distinguished, and in many cases were clearly seen though the stimulus color was not recognized. These appearances could not have been due to fatigue produced by previous color stimuli, since the after-image, which appeared as soon as the stimulus was removed, was, in every case, the color complementary to the stimulus color, even when the latter was not recognized. Moreover, these after-images were repeatedly seen when the two or three preceding stimuli had been colorless, or of such a nature that they could not have produced the after-effects observed. Our results suggested at once that Hellpach's 'gegenfarbige' colors were simply the colored after-images of unperceived color stimuli, since in dark-room work it might be difficult to tell whether the color was perceived during an exposure of three seconds' duration or immediately afterwards. Whichever explanation of Hellpach's results may prove to be correct, it is certain that after-images follow the stimulation of the peripheral retina of the light-adapted eye, and that in many cases the after-image is perceived though the stimulus color is not distinguished.

On Simultaneous Color Contrast: MILDRED FOCHT.

The usual experiments in simultaneous color contrast are performed with colored papers, which reflect much white light mingled with the colored rays. Experiments with the light transmitted by colored glass, in which the admixture of white light is at its minimum, seem to show that unless spectral white light is mixed with the colored light from any surface, that surface will exhibit no change in color quality due to its surroundings. The presence of white light brings about the phenomenon of color contrast in this way: As spectral white light may be regarded as consisting of a number of pairs of complementary colors, elimination of one color leaves its complement alone, though somewhat weakened by the white light composed of the other pairs. Such elimination takes place in simultaneous color contrast; since, in accordance with the law of relativity, the strong color sensation caused by the light-rays from the inducing surface swallows up the much weaker sensation caused by similar light-rays from the reacting surface. Hence only the rays dissimilar to those from the inducing surface are perceived as coming from the reacting surface. Thus, gray on blue appears yellow because the blue background absorbs the blue in the gray, and leaves only the resultant of the remaining rays to enter consciousness. This explanation, which is a purely psychical one, accords with any theory of color vision in which different retinal processes corresponding to different wave lengths are presupposed.

³ *Psychological Review*, Vol. XII., pp. 386-425.

Statistical Method and Literary Values: F. LYMAN WELLS.

Measurement by relative position is the most practical method for a scientific determination of literary preferences. This was applied to ten stories by Edgar Allen Poe, which were returned by forty women undergraduates in the following order and positions: 'The Fall of the House of Usher,' 3.6; 'The Murders in the Rue Morgue,' 4.0; 'Ligeia,' 4.1; 'The Purloined Letter,' 4.6; 'William Wilson,' 5.1; 'The Telltale Heart,' 5.8; 'The Cask of Amontillado,' 6.0; 'Metzengerstein,' 6.6; 'Loss of Breath,' 7.1; 'Le Duc de L'Omelette,' 7.7. The obvious pairing of the stories from the standpoint of accepted literary criticism is not indicated by correlations in the judgments. The attitude toward the 'Purloined Letter' tells nothing of the attitude toward the 'Rue Morgue.' A preference for 'Loss of Breath' tells nothing about 'Le Duc de L'Omelette,' but if a subject prefer 'Loss of Breath,' 'William Wilson' and 'Ligeia' are disproportionately favored. Preference for 'William Wilson' means a dislike of the 'Rue Morgue,' and a dislike of the 'Purloined Letter' means a preference for the 'Telltale Heart' and the 'Cask of Amontillado.' Such results as these, compared with the usual critical attitude, show how little reliance in such matters can be placed upon the subjectivities. From any objective standpoint, most present-day literary criticism is 'three fifths suggestion and two fifths sheer fudge.'

The Type in Psychophysical Data: CLARK WISSLER.

The results of a practise test were considered as presenting a curve varying from the type curve, and in such a curve the individual seems to vary in period as well as in efficiency. The conditions are then the same as have been found for growth in stature, weight, etc., where an increased variability is found for the maximum period of growth due to the combination of variability in stature and in period. The interesting point is that the variability in period seems to represent a constant from which it follows that a correlation of stature, weight, etc., will result in increased coefficients for the time of maximum growth. It was suggested that in correlating the results of a test where practise is a factor and where there is a greater variability in the group at the first trial than in the succeeding trials, the conditions are the same as in the value for stature, weight, etc. The import of this is that the coefficients of correlation for the first trials will be artificially increased and that the small positive correlation found in psychological data represents only a condition of development concealing a state of no correlation. It was suggested that the apparent greater individual variation in

the first trials at a test would tend to reduce correlation so that in opposition to the former tendency the correlation obtained for the first trial would approach the true result. All this is based upon the assumption that a capacity to learn exists that tends to be constant. On the other hand, if such capacity is not constant, but is distributed among the individual's functions according to chance, the correlation for the first trials would be approximately the true correlation. From this it follows that the preliminary trials in a test are sufficient for the study of interfunctional relations. However, the above rests upon theoretical conditions and must be tested empirically.

An Experiment in Habit Formation: JAMES E. LOUGH.

The first twenty letters are arranged alphabetically. Opposite each letter is placed a different letter which is called the 'equivalent letter.' On another sheet are printed rows of the first twenty letters in random order, the order being different in each row. The subject is required to write the equivalent letter under each letter in these rows, always going from left to right. The key of equivalent letters is not memorized, but is consulted as frequently as necessary. The total time required to write each row of equivalents was recorded. It was found that the time required to write such series diminished as the association between each pair of letter equivalents became more habitual. The resulting curves exhibited all the characteristics of the typical practise or habit curve. Practise curves were obtained from three groups of subjects: (A) ten-year-old pupils; (B) fourteen-year-old pupils; (C) adults. Group A required the longest time to write the initial series, but formed the habit most rapidly. Group B required less time for the initial series and formed the habit less rapidly. Group C required still less time for the initial series and formed the habit very slowly. There was relatively little variation within each group to correspond to considerable variation in the class standings of the pupils. Distractions, weather conditions, etc., produce slight modifications in the practise curve, but the general form of the curve is not materially altered.

The Functional Psychology of Sensation and Image: H. HEATH BAWDEN.

Since the time of Kant it has been recognized that sense and thought are not separate faculties of the mind. But their wholly organic and functional character has not been fully appreciated. This is due to the fact that the true relation between thought and action has not been made clear. Knowledge is a process which goes

on within action. The psychology of sensation and volition (the culminating image) is a discussion of the breaks and remaking of connections in the process of experience. Looked at negatively sensation presents the whole experience in the act of breaking down, while from the positive side it furnishes the basis for readjustment. The cognitive process is experience undergoing reconstruction at the point of specific need; it begins with the conflict of opposing aspects and consists of the attempt to reorganize the experience by the mutual interaction of these factors. Stated objectively in physiological terms, these factors are stimulus and response. When these do not function as such they come to consciousness and are then stated psychologically as sensation and image. Delayed coordination is the occasion at once of the presentation of the problem in sensational terms and the formulation of a solution in terms of image or idea. Thinking is the balancing of tendencies represented in the inhibition of the processes of stimulation and response, in which a certain phase of the coordination or situation is taken for granted and another phase is undergoing modification. There is a tension set up between what has been achieved up to date (represented in consciousness by certain sensations and images—vestiges of instincts and habits which are undergoing disintegration) and a new coordination or situation which is present as yet only in incipient form (represented by these same sensations and images in so far as they are dynamogenic or ideomotor). Knowledge is this process of interaction and internal metamorphosis of the experience or situation. Sensation in so far as it is the necessary condition and initial stage in the transformation is itself an element in the total response, while the image in so far as it may be regarded as a reverberation of some previous sense experience is a factor in the total process of stimulation. When the stimulus does not stimulate, *i. e.*, call out the appropriate response, we have a checking of the response, and this recoils upon the stimulus, modifying it in the conscious experience we call sensation. This checking of the response thus is at once the definition of the stimulus in the sensational experience, and of the response in ideational terms. As a revival of past sensational experience, the image is a part of the phenomenon of the stimulus coming to consciousness. As calling out latent dynamogenic tendencies and ideomotor cues, the image is a part of the phenomenon of the response coming to consciousness.

The Distinction between Heart and Head: D. S. MILLER.

The domain of the head is fact, the domain of the heart is value. The paper endeavored, on the basis of this interpretation, to dis-

engage permanent truth from error in current doctrines of the relation of the two.

R. S. WOODWORTH,
Secretary.

COLUMBIA UNIVERSITY.

REVIEWS AND ABSTRACTS OF LITERATURE

The Relation of the Principles of Logic to the Foundations of Geometry.

J. ROYCE. *Transactions of the American Mathematical Society*, July, 1905. Pp. 353-415.

The subject of this essay is not so broad as a glance at its title might suggest. For, first, by the 'principles of logic' are meant simply the formal rules of an algebra of logic, the canons governing the manipulation of assumed concepts of absolute distinctness and fixity. In other words, it is the logic of the 'exact sciences' with which we have to deal, understood as a deduction from a definite set of ultimate (and, therefore, mutually independent and indifferent) premises. Secondly, by the 'foundations of geometry' are to be understood such a set of premises, selected with a view to their sufficiency as a source for the derivation of geometrical truths. Finally, by the 'relation' between these 'principles' and 'foundations' is meant a remarkable similarity, the extent and significance of which it is the chief object of the essay to determine.

The general nature of this similarity may be briefly explained as follows: The terms of the fundamental propositions, upon which an exact science (according to the above-mentioned interpretation) is based, can have no meaning other than that which their place in those propositions gives them. The words used to denote these terms are, therefore, in themselves absolutely meaningless, and no loss is suffered when they are replaced by algebraic symbols. The only relation which is regarded as ultimately subsisting between such terms is that of copresence in determinate groups; and the fundamental principles of the science are simply postulates establishing the existence of these groups and exhibiting the conditions under which the elements of one group may enter into other groups. Now when the postulates of logic and of geometry are stated in this symbolic fashion, it is possible to present them in a form in which they are almost entirely identical.

Professor Royce's paper is largely a restatement of a theory advanced by Mr. A. B. Kempe in an essay of similar scope, in the *Proceedings of the London Mathematical Society* for 1890.¹ In this essay Mr. Kempe sets forth a development of the algebra of logic, using as the fundamental relation between classes not (as ordinarily) that of inclusion, but a peculiar sort of 'between' relation. This relation, as defined in ordi-

¹ The reviewer regrets that prolonged illness has prevented his reading Mr. Kempe's essay, for knowledge of which he is dependent upon Professor Royce's account.

nary terms, is that which one class bears to two others when it includes their common extent and is included within their total extent. Mr. Kempe, however, does not so define it, but, on the contrary, regards inclusion as a mere special case of the between-relation; i. e., the included class simply lies between the including class and a particular class called zero. The between-relation is itself defined without reference to the idea of inclusion at all, solely by means of a set of symbolic postulates. On the basis of these postulates, the whole algebra of logic is readily developed—but with one important peculiarity. No means are provided for distinguishing the zero class and the universe class from any other similarly related pair of classes. They must, therefore, be regarded as *arbitrarily* fixed upon. This, however, does not appear to Mr. Kempe (or to Professor Royce) as a defect in the theory. It is regarded as a decided advantage, indicating the superior generality of the discussion to that based upon the relation of inclusion.

It is well known that in the modern logic of geometry the between-relation of points in a straight line occupies a place of fundamental importance comparable to that which the between-relation of classes occupies in Mr. Kempe's logic. In many respects these two relations are remarkably similar. A surprisingly long list of elementary properties can be given which belong equally to both. But there are two fundamental differences.

I. If the *points* b and c are both different from a and d ¹ and lie between them, neither a nor d can lie between b and c . This does not hold for logical classes; and furthermore,—

II. For every *class* b between a and d , another class c exists between a and d , such that both a and d lie between b and c .² Such classes as b and c will be referred to below as 'conjugate mediators.'

There are various other differences between the logical and the spatial order, but all more or less closely connected with these two. The most remarkable is the existence of logical 'negatives' or 'obverses,' which (like opposite points in a spherical surface) have every other class in the universe between them.

From reasons such as these, Mr. Kempe, followed by Professor Royce, concludes that the system of logical classes may be regarded 'as much more general and inclusive than the system of the points of space.' That is to say, "One may view the points of a space as a select set of logical elements, chosen, for instance, from a given 'universe of discourse.'" This thought Professor Royce recognizes as the essential conception at the basis of Mr. Kempe's discussion, and it is equally essential to his own. The importance of the thought he explains as follows: "The relations amongst logical entities are, in any case, the most fundamental relations that we know. Experience shows us in the outer world those

¹ In Mr. Kempe's usage, every element lies 'between' itself and every other. For brevity's sake we shall hereafter ignore this fact.

² To verify this law, substitute $m + n + o$ for a , $o + p + q$ for d , and $n + o + p$ for b ,—a perfectly general supposition. Then $o = m + o + q$.

ordinal space relations which geometry generalizes in the concept of 'between.' But our own thinking processes show us the meaning of the logical relation [of inclusion]. The latter relation, then, is more suited to be the basis for a theory of the logic of an exact science, in case we can only so define and restrict its application⁴ that our ideal geometrical relations can come to be viewed as *special instances* of those forms which we can develop by the use of pure logic" (p. 355; italics mine).

If space permitted, we might be pardoned for stopping to question Professor Royce's antithesis of 'experience,' on the one hand, and 'our own thinking processes,' on the other. This inquiry is rendered unnecessary, however, by the fact that Mr. Kempe's essential thought involves a very serious confusion, due apparently to his not having observed the very different logical significance of the two differences between the logical and the spatial order which we numbered I. and II. above. The confusion in question is that of the *inclusiveness* of a system with its *generality*. The proposition contained in I. does indeed place a specific limitation upon the system of points in space, from which the system of logical classes is free; and the latter system is in so far the more general. But it is to be noted, that the mere freedom from this limitation is by no means equivalent to the proposition of II.; just as the denial of the application of this latter proposition to the points of space is by no means equivalent to I. In other words, II. imposes as veritable a *specific limitation* upon the system of classes as I. imposes upon the system of points. This fact seems to have been concealed by the circumstance, that whereas I. is clearly a restriction upon the otherwise possible multitude of points, II. apparently (though only apparently) enlarges the possible multitude of classes. The fact remains, however, that it is as positive a specification of the system of classes, that it shall contain conjugate mediators, as it is of the system of points, that it shall contain nothing of the sort. We can not, therefore, follow Mr. Kempe (and Professor Royce) in the opinion, that 'our ideal geometrical relations can come to be viewed as *special instances* of those forms which we can develop by the use of pure logic.' What we have here is two mutually exclusive species of the same genus.

While, however, the logical system is no whit more general than the spatial system, it is truly much more inclusive. That is to say, the spatial system would have to be extraordinarily enlarged⁵ if it were to be made completely parallel to the logical system. There is in what we have said nothing at all to oppose the suggestion, that we regard 'our' space (or any other space) as a selection from a space thus ideally enlarged. But, for the reasons above given, such a procedure would appear to be wholly uninformative.

⁴ As he believes Mr. Kempe has done by reducing it to the logical between-relation.

⁵ The reader should understand that this 'enlargement,' i. e., the addition of conjugate mediators, means much more than the addition of infinite dimensionality to space.

There are, moreover, other serious difficulties attaching to Mr. Kempe's conception. Our whole knowledge of the multidimensionality of the logical system depends (as is apparent from Professor Royce's treatment in §§ 122 and 123) upon the assumption of conjugate mediators. Hence, when the system of logical classes is reduced (essentially by the elimination of conjugate mediators) to the inferior complexity of the system of points in a space, it remains an open question whether the reduction may not have gone too far. That is to say, there remains no warrant for asserting the multidimensionality of the logical system thus reduced. It may be of infinite dimensions, but we can demonstrate the existence of no more than a single line. Professor Royce and his predecessor apparently assume without question the possibility of selecting from the conjugate pairs in such a way as to leave the infinite dimensionality of the system uncompromised. In the absence of explicit proof it may further be questioned, whether the parallel-axiom is rightly said to concern only 'the limitation of the selection of the lines admitted into a given system' (p. 411). For it might be hard to reconcile the selection of one out of an infinite multitude of otherwise possible parallels with the preservation of the continuity of angular rotation. It may be noted, that such a selection, if applied at any point of a Lobatchewskian plane, would at once reduce it to two mutually perpendicular straight lines.

We have hitherto spoken of Professor Royce's paper only in so far as it is, as its author says, 'a restatement of Kempe's logico-geometrical theory.' It remains to consider the original aspects of the present paper. These belong almost wholly to the logical side of the discussion, the connection with geometry being effected in essentially the same manner as by Mr. Kempe. The principal novelty is a change of starting point. Instead of the between-relation, Professor Royce takes as fundamental another relation, which has the methodological advantage of obtaining among groups of any number of elements greater than one, and also of being absolutely symmetrical. This is the relation in which a group of logical classes stand, when they have no common extent, and together exhaust their universe. Of course, the *O*-relation (as he calls it) is not defined at the outset in any such way. On the contrary, the notions of inclusion and exhaustion have to be regarded as merely incidental phases of the *O*-relation itself. Accordingly, the *O*-relation must first be defined in its own terms, so to speak; that is to say, by a set of wholly symbolic postulates. This task is executed with remarkable ingenuity. By far the greater part of the essay is devoted to a development of the algebra of logic upon this basis. Of especial interest in the course of the discussion is the treatment of 'conjugate resultants,' an extension of the notion of 'conjugate mediators' mentioned above. The logic thus developed has the peculiar character (already noted as belonging to Mr. Kempe's logic) of reducing the zero element and the universe element to the dead level of the other elements of the universe. Logical addition and multiplication, for example, are defined with reference to any element as 'origin'; and it requires the arbitrary selection

of a particular element as invariable origin—the zero of ordinary symbolic logic—to reduce these operations to their accustomed form.

Needless to say, the details of this development are worked out with absolute accuracy. A few harmless inelegancies may be noted—as, for example, the fact that the premises of §§ 23 and 24 are oversufficient—but these are quite trivial. Some useless pains are expended upon a distinction between ‘equivalence’ and ‘identity.’ As identity means no more than equivalence for all possible purposes, and as equivalence is here defined with reference to the only purpose which the entities in question serve, *viz.*, presence in *O*-collections, the distinction appears to be superfluous.

One fact we may perhaps be pardoned for mentioning, and that is that from beginning to end the essay is exceedingly interesting. The casual reader who opens the essay in the middle and lets his eye pass down an average page, may well be dismayed by the show of abstruse algebraic symbolism. But alarm is needless. The author sets out from the beginning of things, and all the fearful-looking formulas are fully explained as he goes along. Scarcely any technical knowledge of any sort is necessary to comprehend the whole discussion.

THEODORE DE LAGUNA.

UNIVERSITY OF MICHIGAN.

JOURNALS AND NEW BOOKS

REVUE PHILOSOPHIQUE. February, 1906. *Pragmatisme et pragmatisme* (pp. 121-146): A. LALANDE. — A history and criticism of pragmatism and humanism. The philosophy is a realistic one, a combination and culmination of all nineteenth-century tendencies, with one exception; this single tendency which has not been taken into account is the sociological one. Pragmatists have tried to make truth individual, but their own realism forces upon us the interpretation that truth is objective in the sense that it is the limit approached by the totality of human opinions. Intellectualism is a means to the end of socializing all individual judgments; it is thus pragmatic. *L'ironie* (pp. 147-163): G. PALANTE. — Irony is an individual, not a social, emotion; but its reference is chiefly to society. It bases on a dualism between feeling and reason, or upon the difference between our aims and their results. Essentially pessimistic in tone, it is not an intellectual, but rather an esthetic attitude. *De l'avarice* (Conclusion) (pp. 164-201): ROGUES DE FURSAC. — In the miser the egoistic feelings are unbalanced; positive love of life, as such, is often lacking. Yet this does not imply a suicidal tendency, for the miser lives for the love of wealth; having low sensitivity, he never finds life positively intolerable. Lacking in all social feelings, he is vain, envious and suspicious; a mystic, too, losing himself in ecstasies over abstract wealth. He belongs to the very opposite class to the hypnotic, being neither impulsive nor influenced by suggestion. He is rarely criminal,

for the same reason that he does not speculate; viz., he fears all risks. *Notes et documents: Sur l'inhibition exercée par la pensée sur la tonicité et les reflexes musculaires* (pp. 202-208): J. L. BAUDIN. - A theory aiming to account for the inhibitory function of the cortex in controlling spinal reflexes. The two cases—that of anticipated perception and adjustment and that of unexpected ones—are shown to prove that in the latter cases we have, as a result of imperfect correspondence between motor and image preadaptations and the peripheral stimuli, 'free' reactions and feelings which, lacking all momentary central control, are exaggerated and relatively violent. *Analyses et comptes rendus: Landry, Principes de morale rationnelle*: J. MARITAIN. *Lukas, Psychologie der niedersten Tiere*: HENRI PIÉRON. *Renda, Le passioni*: TH. RIBOT. *Bahnsen, Wie ich Wurde, was ich Ward*: L. ARRÉAT. *Dalleggio, Beitrage zur Psychologie Rousseaus*: L. ARRÉAT. *Revue des périodiques étrangers*.

RIVISTA FILOSOFICA. January-February, 1906. *Sull' idealismo critico: Saggio di una difesa del sapere volgare* (pp. 3-23): C. CANTONI. - A temperate criticism of Jerusalem's 'Der kritische Idealismus und die reine Logik.' Jerusalem claims that idealism results in agnosticism and in solipsism, that it leads to the solitude of thought and alienates philosophy from science. He wishes, therefore, to put the study of logic upon a strictly empirical basis. *Fisica e filosofia* (pp. 24-61): B. VARISCO. - Considerations suggested by Duhem's 'La Théorie physique.' The physicist has no concern with metaphysics, but the philosopher can not ignore the discoveries and the methods of physics. *La teoria del definire e del classificare in Platone e i rapporti di essa colla teoria delle idee* (pp. 62-73): G. VAILATI. - The ethical and esthetic implications of Plato's thought are relatively accidental. The purpose of the theory of ideas is to construct a more orderly world for science than that given by sense perception. *La Sociologia e l'insegnamento secondario e superiore* (pp. 74-89): A. PAGANO. - Continues the writer's plea for cultivating a sociological point of view in the study of jurisprudence in order that officials may realize that laws and institutions exist for the concrete needs of society, and that the cultivated classes may be fashioned less in the spirit of the ancien régime. *A proposito di una teoria Epicurea* (pp. 90-93): A. TAGGI. - Opposes an opinion of Brochard and Zeller on a question of the ancient distinction between pleasure in repose and pleasure in motion. *Rassegna Bibliografica. Notizie e Pubblicazioni*.

ARCHIV FÜR GESCHICHTE DER PHILOSOPHIE. January, 1906, Band XIX., Heft 2. *Hobbes-Analekten, II.* (pp. 153-176): F. TONNIES. - Two Latin and one French letter from Hobbes to Mersenne, the first being a criticism of Descartes. Descartes's answer is given. *Philolaus* (pp. 176-217): W. R. NEWBOLD. - A reconstruction of Philolaic cosmology based on a new interpretation of two passages, the one referring to the function of number and the gnomon, the other to the principles of determination and indetermination. Philolaus, in view of the

lately discovered algebraic statement of geometric truths, is inspired to express justice, temperance, etc., in like manner. *Zum Verstandniss von Spinozas 'Ethik'* (pp. 218-225): W. M. FRANKL. - An attempt to trace certain difficulties in Spinoza's 'Ethics' to fundamental dispositions of the man. *Die deutsche Literatur über die Sokratische, Platonische und Aristotelische Philosophie*, 1901-1904 (pp. 227-287): H. GOMPERZ. - The greater part of this long article is given to detailed and appreciative comments on H. K. Joel's 'Der echte und der Xenophontische Sokrates,' and to somewhat severe criticism of H. Röck's 'Der unverfälschte Sokrates, der Artist und Sophist.' To be continued. *Jahresbericht über Neuerscheinungen aus dem Bereiche der arabischen Philosophie* (pp. 288-291): M. HORTEN. *Die neueste Erscheinungen. Zeitschriften. Eingegangene Bücher.*

Dreyer, J. L. E. *History of the Planetary Systems from Thales to Kepler.* Cambridge: University Press. 1906. Pp. xii + 432. 10s. 6d.

Duncan, Robert Kennedy. *The New Knowledge.* A popular account of the new physics and the new chemistry in their relation to the new theory of matter. New York: A. S. Barnes and Co. 1905. Pp. xviii + 263.

Hight, G. Ainslee. *The Unity of Will. Studies of an Irrationalist.* New York: E. P. Dutton and Co. Pp. xv + 244.

McTaggart, John. *Some Dogmas of Religion.* New York: Longmans, Green and Co.; London: Edward Arnold. 1906. Pp. xx + 299.

Philosophische Abhandlungen. Max Heinze zum 70 Geburtstage gewidmet von Freunden und Schülern. Berlin: E. S. Mittler und Sohn. 1906. Pp. 245. 5 M.; bound, 6 M.

Rivaud, Albert. *Le problème du devenir et la notion de la matière dans la philosophie grecque depuis les origines jusqu' à Théophraste.* Paris: F. Alcan. 1906. Pp. viii + 216. 3.75 fr.

Wellhausen, Jülicher, Harnack, Bonwetsch, Müller, Funk, Troeltsch, Pohle, Mausbach, Krieg, Hermann, Seeberg, Faber. *Die Kultur der Gegenwart.* Teil I., Abtheilung IV. *Die Christliche Religion mit Einschluss der Israelitisch Jüdische Religion.* Berlin and Leipzig: B. F. Teubner. 1906. Pp. x + 752.

Young, John. *Essays on Evolution and Design.* Edited, with an analysis and an introduction, by William Boyd. Glasgow: James Maclehose and Sons; London: Macmillan and Co. 1905. Pp. xiii + 248. 6s.

NOTES AND NEWS

THE following is from the *Athenæum* of June 2: "In an article not yet published Professor Sayce continues the study, begun by him twenty-two years ago, of the true names of the Assyrian kings recorded under

Greek forms by Ctesias. Why Semiramis should have become so famous in history, or rather in legend, is still unknown; but Professor Sayce suggests that the first royal lady of that name was probably the wife of Hammurabi or some other king of the first Babylonian dynasty, and that most of the stories that have gathered round her were originally told of the goddess Ishtar. The article in question will appear in an early number of the *Proceedings of the Society of Biblical Archeology*."

DR. SAMUEL SATHIANATHAN, M.A., LL.D., professor of logic and moral philosophy at the Madras Presidency College, died in Japan on April 4. Dr. Sathianathan was one of the finest Eastern products of European education. His death occurred while he was returning to India from America, whither he had been invited to lecture on 'Indian Philosophical Systems.'

PROFESSOR W. OSTWALD's proposed retirement from academic teaching causes lively interest in chemical circles in Germany. Professor Ostwald wishes to devote his time chiefly to problems connected with the chemistry of painting. He will, accordingly, retire to his country house at Grossbothen, Saxony, where he has a private laboratory.

DR. W. C. FARABEE, of the anthropological department at Harvard University, with three students, will next year conduct a research expedition about the headwaters of the Amazon. For a time a base will be established at Arcquipa, Peru. The party will be gone three years.

DR. A. C. HADDON, F.R.S., lecturer in ethnology at the University of Cambridge, who will deliver a series of Lowell lectures in Boston next November, will discuss problems of race, culture distribution and the evolution of religious ideas in Melanesia.

It is reported that M. André Godfermaux, author of 'Le Sentiment et la pensée' and a well-known contributor to French philosophic journals, died recently at Cannes. M. Godfermaux, at the time of his death, was devoting himself chiefly to the psychology of religion.

THE publication is announced of a new Italian journal of pedagogy, the *Rivista di Pedagogia*, edited by Professor Dedominicis, of the University of Pavia. The journal will appear each month, with the exception of the two months of vacation.

MR. S. P. HAYES, fellow in psychology, at Cornell University, has been appointed to take charge of the psychological laboratory of Mount Holyoke College, in place of Dr. Kate Gordon, who has accepted a position in Teachers College, Columbia University, for next year.

STUDENTS of the new theory of matter may be interested in the forthcoming book of Professor H. C. Jones, of Johns Hopkins University, entitled 'The Electrical Theory of Matter and Radioactivity.'

MR. ALEXANDER DUNLAP LINDSAY, lecturer in philosophy at Victoria University, has been elected a tutorial fellow of Balliol College.

MR. WILLIAM PHELPS, scholar of Balliol College, has been elected fellow and assistant tutor at Corpus Christi College.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

METAPHYSICS AS A BRANCH OF ART

METAPHYSICS is frequently called a science of first principles, a science of the nature of reality, a science of possible experience and so on. This paper tries to show that metaphysics, from the standpoint of its practical effect, might be classed more fitly as an art than as a science.

The chief distinction between art and science is here assumed to be this, that art is concerned with arousing emotion, and science with giving definite perceptions; that art deals with general ideas or abstractions, but science with particular facts. Taking first what we may call the consumer's standpoint in art and science, we have the consumer of art enjoying an esthetic consciousness, and the consumer of science being made acquainted with fact. It is quite generally agreed that the esthetic consciousness is essentially emotional, or at least affective, but it is by no means so indubitable that the learning of scientific facts is accompanied by a strong affective tone. Now, emotion is distinct from cognition by reason, I believe, of its relative vividness and vagueness, and the esthetic consciousness is more vivid, but at the same time more vague, than the scientific. By being more vivid I mean that the enjoyment of art is an excitable and very unstable condition of mind, that in it one may readily become exalted, enthusiastic and highly suggestible. A little art may accomplish more of this kind of thing than a good deal of science could. For instance, an army, even of savants, would be more inspired by singing 'Dixie' than by chanting Newton's laws of motion. Then, too, many of the arts—as music, dancing, sculpture, architecture—appeal so directly and inclusively to our motor apparatus that they can summon a wealth of muscular and tactual excitements, conducive to emotional intensity, which are usually at a minimum in the scientific consciousness. Indeed, the very fact that the artist must present the idea to 'sense' is a guarantee that a certain pitch of vividness is expected. The esthetic consciousness is vague in the sense that it turns loose a great deal of unapplied enthusiasm, it is

exciting in a general way with no specific suggestion as to how that excitement is to be worked off. Art is stimulative without being essentially instructive.¹

To illustrate this function of art, take the effect of Donohue's statue of young Sophocles. The erect head, open mouth and lifted chest suggest a full deep breath. The observer takes at once a full deep breath, and before long the elasticity, grace and freedom of the statue's pose have tempted along the observer's imitative impulse until he gets the most lively feeling of animation and buoyancy—a genuine emotion of joy. But at this point the statue stops. The emotion it has evoked must find expression somehow at some time, but the precise mode of expression depends not upon the statue but upon the observer. A musician may put his feeling into a martial melody, but a shoemaker will put it into his shoes. The point is that the statue, although it has had a palpable and literal effect, has not given any detailed instruction about music or shoes. It has conveyed only the very common, very general idea of animation or exaltation, but its beauty lies in the peculiar vivacity with which it gives that general notion. Compare with this the effect upon the layman of being told that deep breathing oxygenates the blood, and that this is a good thing. His conscious response to this is to do the thing which the statement itself suggests, to begin breathing deeply, and that for him is the end of the matter. The difference in the two cases seems to be this: The statue appears to the observer to presuppose nothing, but to be itself the starting-point of interest; the thing it does is to stimulate an instinctive reaction, and so to present the observer with a vivid emotion. It then becomes the observer's problem to work off that emotion. In the second case, the statement of fact does presuppose an interest in one's own physical well-being. It does not itself arouse emotion, but it guides the interest already there, and what one finally does about it is the thing itself, i. e., deep breathing and consequent oxygenating of the blood. That art communicates general ideas and science particulars is illustrated, I think, in a comparison of Rodin's statue of Balzac,² in which only the face is treated in detail, with that which a scientific presentation of the visible man would have to be—say, a photograph. Rodin impresses us with a few traits of character, the photographer would impress us with every fold in Balzac's garments, every button on his shoes. Again, what a poet would call an illimitable sea, a scientist would call a body of water three thousand miles wide. Millet's

¹ This statement of the function of art seems to me somewhat like Professor Fite's view expressed in the article 'Art, Industry and Science,' *Psychological Review*, Vol. VIII., pp. 128-144.

² *The World's Work*, November, 1905, p. 6821.

pictures impress you with the dignity of work as well as the poverty of the worker, but they give you no statistics.

If we turn now to the standpoint of the producer in art and in science, a more intricate situation appears. But, though it is true that the scientist is moved by artistic impulse in the creation of his hypotheses and gets esthetic satisfaction out of his products, and though it is true that the artist proceeds with scientific precision to secure a definite effect, yet I believe that the final object remains perfectly distinct in the two cases. The ultimate aim of the scientist is always to convince some one, that of the artist to interest and move some one. The maxims of the two professions have opposite implications. The artist talks of greatest possible effect with fewest possible lines, of conveying much in little, of letting the observer's fancy supply details. The scientist, on the contrary, is advised to get little out of much, that is, to be lavish of facts and sparing of theory, to have a full supply of details and particulars for any generalization which he propounds. The artist's success depends upon whether he arouses interest; he does not care whether you believe his particulars. The scientist, however, stands or falls by his particular facts. If his facts are not facts, he is without honor, theorize he never so wisely. Science guarantees only definitely dated and located events, and is, therefore, essentially a statement of what has happened. That certain of these things will happen again, or will always happen, the scientist believes, but does not know. Prophecy is not his province, hence the statement of universally valid laws or of generalizations which anticipate experience, however expedient these may be, are not scientific.

Art, then, transmits abstractions and general concepts rather than particular facts, and it offers emotional effects which it tries to make vivid. Can the same thing be said of metaphysics? That metaphysics has to do with abstractions and general concepts seems a discreet assumption which requires no insistence, but that metaphysics is chiefly concerned with emotional excitement is not at once so obvious. My argument for this belief is, that the fundamental metaphysical categories correspond to typical motor attitudes, and the consciousness of these attitudes is the basis of emotion; and further, that the teachings of metaphysicians have no immediate result in overt action, but they do have an effect upon mood, sentiment or disposition.

To illustrate the connection between concepts and motor attitudes, imagine the case of a person trying to thread a needle. Suppose this person to try a few times to put his thread through the eye of the needle, and without success. The failure induces a reflective pause.

If now the first idea persists and the man concludes that one must be firm with the thread and make it go through, he may never succeed. But if the first plan is surrendered and he realizes that what he wants is not to do the thing in that particular way, but to do it in any way, then he has arrived at a conceptual view of the case. He has generalized his desire, or, in other words, has taken the transitional step towards some other means of attaining his end. The other means is slipping the needle over the thread. The concept of threading the needle corresponds to an attitude which is intermediate between the position of the body in putting the thread through the needle, and the position of the body in putting the needle around the thread. These two positions are, of course, quite similar; the head is held forward, the eyes fixed, both hands are held up and close together, each grasping an implement, and all these points common to the two positions are the connotation of the concept of doing the thing at all. The variable element of the action is a slight movement of the hands,—one either holds the right hand still and moves the left, or holds the left and moves the right. During the period of deliberation, while the concept is emerging, both hands are held still and one is simply in the general attitude of threading a needle. The concept means the attitude.

In metaphysics we do not thread needles, but, following Kant, we affirm, deny and limit, we unify, differentiate and integrate, we exist, cause and reciprocate, we have possibilities, actualities and necessities of action; or, with Hegel, we posit, negate and reconcile,—and in every case the significance of the category seems to me just a bodily attitude. I can not, for example, posit or affirm anything strongly without a tendency to face the source of the suggestion or at least to imagine it in front of me, without a feeling of clenched hands, a forward and downward motion of the head and a pushing out of the chest—which induces inspiration. Negation is a reversal of all this, an opening of hands as if to drop something, the impulse to turn away and the expiration of breath. An act of affirmation may, of course, take different particular forms: if some one asks for an instructive book to read and you walk over and set a book down with a thud on the table, that is literally a 'positing' of that book as instructive. Or an act of affirmation may be the mere utterance of 'yes.' In either case, however, something like the experience described above would be the kernel of the meaning. The meaning of unity and variety I should locate in the fundamental acts of contraction and expansion. The primitive organism preserves its integrity or oneness by shrinking together in the presence of a harmful stimulus; it varies its experience by expanding or by enlarging the number of points of contact with other things. In human conscious-

ness it is the narrowing down of active range, or the touching of one's self, which intensifies the sense of personal identity or unity. I believe that the idea of unity always has this implication of tension towards a center, and that we comprehend unity in outside things by a literal contraction or huddling of ourselves together. Variety means turning in different directions, the impulses to movement are all away from any single fixed center, the gestures and whole attitude are expansive. Again, the category of substance as the supporter of experience, or substratum and background of all qualities, is no other than the concept of self. The idea of causality is the idea of substance doing something, of 'being' active. The meaning of the idea depends upon the experience of our own bodies doing things. It is commonly enough realized that we can not understand the people about unless we identify our selves and activities with their selves and activities, we must try to put ourselves in their place. The same thing is true of the inanimate part of our surroundings; we understand the hardness of iron by flexing our muscles and trying to be as rigid as iron, that is, by trying to support what it will support, or we see better what the force of steam is by trying to push the things it can push. It is through an attitude and activity of the self that we can put an ultimate meaning into things and events. Take finally the categories of modality. They become apparent in the facial and bodily changes which occur as, say, the state of conviction settles down upon one. The realization of a thing as a mere possibility comes with an attentive, expectant facial expression and hesitant, tentative movements and gestures. The realization of the actual is a normal, poised, relatively placid condition. The realization of necessity brings a certain feeling of fatalistic rigidity, a sense of being knocked down and hopeless. These three types of expression appear in some works of art. The sensitive and subtle delicacy of Botticelli's faces expresses a life fed upon mere possibilities of experience, Greek statues show people who dealt with the actual, who had give-and-take relations with reality, and some of Rembrandt's faces and Millet's figures express the sense of the inevitable. A facial expression and an internal qualm or so may seem like a trivial significance for a concept like necessity or actuality or possibility, but when I try to understand what mere unqualified possibility may be, or what pure actuality is, or what unity and variety in the abstract are, or what sheer unpolluted affirmation amounts to, I confess that to find some genuine bodily attitude seems to me to be doing pretty well.

The connection between motor attitudes and emotion is familiar from the work of Darwin, James, Lange and Dewey. If, then, it were allowed that the categories stand for motor attitudes, we should

expect that the function performed by the basal concepts of the understanding would coincide with the results of these attitudes. These results are, for consciousness, the generation or the emphasis of certain sentiments and emotions. The second part of the statement made above was that metaphysical doctrines made no difference immediately for overt action, but that they did make a difference in sentiment, mood or disposition. For example, the insistence upon negation in general, upon the value of sacrifice, rejection and denial tends to promote Stoic temperament, whereas to enlarge upon the importance of affirmation, of agreement, acceptance is to encourage the Epicurean disposition. The familiar gibe that one's philosophy depends upon the digestion, suggests the remark that the digestion may be influenced by one's philosophy. Both ways of stating the connection are true, the metaphysical system which expresses its author's disposition takes its effect out in the moods and sentiments of the reader. A temperamental difference between the Oriental and the Occidental mind is reflected in the relative valuation which these peoples put on the categories of passivity and activity, and that difference is reinforced by the working out of these concepts in religious and metaphysical systems. Finally, following the pragmatic method, let us ask of one or two metaphysical doctrines, What difference do they make? What shall one do about them? Augustine taught that since we doubt we must exist. What shall be done about it? There is no question that Augustine's teaching had influence, that his argument is interesting and even exciting, but its value is an emotional one. It is entertaining and agreeable to feel that the conscious individual has a pretty important part to play, this feeling may serve to transfer interest from one sphere of phenomena to another and possibly to induce investigation of psychical laws, but its suggestiveness for present action is not assignable. Or take Kant's prescription of 'simple conformity to law in general.' What result would that have upon overt action? Some result at some time, of course, but nothing that we can immediately indicate. What one does get from the metaphysic of ethics is very much the same effect that comes from Prometheus Bound, the book of Job or Michelangelo's Moses,—a sense of intolerable but inevitable law. Metaphysics, then, like the work of art, gives an impression which is often vivid and interesting, but which is emotional and purely general. The truths of art and of metaphysics are felt truths, but are not facts which have at any time been demonstrated.

KATE GORDON.

MOUNT HOLYOKE COLLEGE.

THE GROUND OF THE VALIDITY OF KNOWLEDGE¹IV. THE JUSTIFICATION OF PREMISES AND THE STRUCTURE OF
KNOWING: CONCLUSION

ON the basis of the investigations and conclusions presented in the preceding articles, especially of those concerning the character of the correctness of data, of perception and its object, and of the implication of a transcendent, it is now possible to state both more completely and in greater detail than formerly the conditions upon which the success, and so truth, of alogical cognition, particularly foreknowledge by inference, depends, and so also to gain answers to the remaining of the principal questions raised in my initial paper.

Now it is, of course, well known that this foreknowledge, as an event within the individual, takes place by means of premises gained, in general, by inductive methods. These premises may be either special, strict laws, or generalizations,² empirical, or highly symbolic and abstract laws in the domain of theory. Let it be granted, too, that in the derivation of these inductive laws, for which, of course, measurement is necessary, and although this is possible in some cases only by instruments constructed in the light of theory, the usual recognized norms and maxims of scientific analysis have been observed. It will then result—since perception is here the ‘starting-point’ of knowledge—from that unequivocal and determinate relation of reference, etc., between perceptive act and transcendent object, which constitutes the ‘correctness of data’ in the cases examined, both that the *generalization* to all cases is *justified* and that the *inference-conclusion* is *ensured of success*. The justification and ensurement so result because, with it accepted that other conditions, those indeed of formal correctness and of the independent existence of the transcendent, are also demanded for success, the correctness of data which, too, is necessary, either implies alogically or is itself possible only through and is guaranteed only by this last ontological condition. That this is the case can, I think, be established as follows: Admitting that for any investigation in hand the purpose of this decides the degree of determinateness which is accepted as satisfactory in the ‘cases examined,’ nevertheless it has been found that the transcendence is mediated and made determinate through an unequivocal causal connection between the transcendent elements of the perceived object on the one hand, and those forming, within the subject, the conditions for the perceptive act on the other. But the

¹ The three preceding articles appeared in this JOURNAL, Vol. III., Nos. 8, 10 and 12, respectively.

² Compare Sigwart, ‘Logic,’ translated by Dendy, Vol. II., pp. 370–374.

perceived object is in turn similarly connected with still other transcendent elements, these with others, and so on, and these all together as a manifold form a permanent, uniformly acting and causally interrelated transcendent agent. One and the same transcendent is implied, then, to have both the data correct and the inference 'come true.'

Accordingly, with this transcendent existing, it is evident that its causal order, persistence and interconnection are the ontological conditions under which those cases, which are other than and yet held to be like the ones examined and to all of which the generalization refers, both *actually are*, 'under the same conditions,' like those examined and are causally connected with them. However, these ontological conditions and relations may or may not include the specific ones for the perceptive act itself. In fact, as the inductive procedure usually takes place, they do not; the conditions for the perception itself, although 'working' and mediating the 'correctness,' are themselves not directly perceived, but, rather, only those 'objective' conditions and relations, etc., which are known as 'other than' the subject. It is these that are generalized, and it is through their causally uniform connection, first, in one direction, with the transcendent 'elements' conditioning the perception itself, and, secondly, in the other, with those beyond, that the generalization is justified and the inference assured of 'working successfully.' On the other hand, the conditions for the perceptive act may, of course, also be stated in a law, so that it may be said that if certain specific ones of these are also present in the future, then some specific transcendent object will be perceived and the prediction verified. In either case the success of the inference is ensured only on such an ontological basis, 'biologically implied,' and submitting to statement in either hypothetical, categorical or apodictic form.

From all this there results a number of important characteristics of the alogical *knowing* process as including both the making and the use of the generalization for inferential purposes.

First, and analogous to perception, but with, of course, the difference between the particular, present and the universal, the generalization, when taking place as a conscious experience, transcends itself by making a psychological and yet determinate reference to a manifold, past, present and future, so that this transcendence is one with biological implication and is, too, mediated on a transcendent basis.

When, now, the generalization is applied to some present, particular, now-perceived quality, from which by inference the 'mental time-leap' to one as-yet-not-perceived is to be made, each successive judgment of the inference process transcends itself in a similar man-

ner, with, therefore, a determinateness of this relation, and so a *correspondence* between the transcendent causal order on the one hand and the elements of the inference process on the other.

Secondly, as in perception, so here, by virtue of their self-transcendence, there is known 'in' the judgments of the entire inference process, that is, in the case of this being an instance of knowing in the physical sciences, something 'different in kind'; something which, so far as it either was, is now or will be 'already there,' is thereby made just this difference with, that it is referred to, known and implied by the knowing process, and is both 'in' and yet 'beyond' this.

Thirdly, although known in a way specifically different from that in which the *perceived* object is known, since perception and inference are species of cognition, nevertheless the object of this inferential knowing experience either has been, is now or will be as *real*, in a sense different from merely valid, as is the object of *normal* perception. The transcendent elements, although unperceived and perhaps unperceivable, are through their causal connection with the real and known object of perception also both real and known.

The transcendent is, then, that ground for the validity of alogical knowledge which is external to this knowledge itself. It is the general ontological condition of memory, of perception, of alogical inference, perhaps of all experience. It is the *possibility* of experience, but not possible experience; yet it is experienced. For any cognitive experience it is always 'beyond' at the same time that, as known, it is 'in' this experience. It is known if the transcendent conditions for any specific kind of knowing are present; if these are not present, then it is a 'thing-by-itself,' but not '-in-itself.'

We are now in a position to offer a solution of still others of the problems which were suggested in the first article. If the genetic view of knowledge is taken, that 'thought is an instrument of adaptation,' etc., and if alogical cognition is that means of adjustment which can perhaps best conserve and further life and so even make other experiences possible, it appears that such important foreknowledge is both real and possible only on the basis of the conditions above enumerated. In fact, the conviction that these are present, to ensure the success of foreknowledge, has a practical outcome quite different from that which any other view has. In the instance, then, of conflict or discordance, the felt-need of readjustment does not itself constitute this outcome. Although in the need, as directly experienced, the transcendent may not be distinguished from the immanent, or, even granting that it is, since the knowledge of the detailed conditions for success may be absent, so the need does not disclose directly that which is revealed ultimately, namely, that an

essential condition in the readjustment is an ontological ground. It is to this as a transcendent manifold that the subjective readjusting process must conform in order to attain that success without which it is meaningless. The character of this conforming, which constitutes the correspondence between the inference process as a series of judgments and as a natural event and the transcendent manifold, has already been presented; but there are still *further details* of this, the statement of which will present the *manner* in which that which is transcendent to consciousness and is order, etc., is known in conscious experiences, characterized as they seemingly are by lack of order and permanence.

A beginning may be made here with the perceptive judgment, which may be dismissed briefly. Whether this be identical with, or different from and yet simultaneous with, or subsequent to the act of sense-perception, it does not refer and relate to the content of perception, but rather to the same transcendent object to which the perceptive act refers. As a psychological event, distinct from the word- or other symbols which may formulate it, the perceptive judgment makes a determinate and unequivocal reference beyond itself to transcendent elements; and, as in the case of perception, this reference may be present or take place without proof that it so is, just as an object may be 'really there' without proof. Truth, then, in the sense here of 'correct' and of 'correspondence,' is independent of proof. Accordingly, it may be said that a perceptive judgment is true, if the characteristics, qualities, etc., known after the manner of transcendence and of alogical implication 'in' the 'content' of, and 'stood for' by the symbols of its formulated predicate, *actually* do exist in the transcendent object of which the assertion is made. If they do so exist, then the determinateness of the relation between them and the elements of the judgment process constitutes their correspondence. The proof in any particular instance that they are present is derived only from the system of knowledge; but upon this proof the actual presence is not dependent.

But the judgments with which science deals are, for the most part, 'derived' and universal, as opposed to the perceptive judgments as original, etc.; and in the physical sciences, which were selected for analysis in order to get at the epistemology of scientific knowing, the derived judgments are in symbolic and equational form.

The typical procedure here consists, first, in accepting certain symbols for the qualities, etc., perceived either directly or, by the use of instruments, indirectly; and, secondly, of securing for these symbols definite numerical values by means of measurement. From the cases so examined equations are obtained expressing empirical laws, the justification of which has been presented. From them,

thirdly, although they themselves involve or presuppose certain principles of interpretation, by means of the further use of instruments constructed in the light of theory and by mathematical manipulation according to the rules of the calculus and the principles of logic, more and more 'abstract' relationships are obtained, and the domain of theory is reached. In the instance of making an application of such a theory to a particular case, as, for example, in predicting an event, a procedure in general the reverse of the above is adopted. Such a system, in algebraic form, exact, detailed and complete, constitutes that which I would classify as theoretical logical knowledge, always with the possibility of some specifically practical application.

What, now, is the detailed character of the *knowing experience* of the physicist while making actual use of such a body of knowledge in either 'working' up to or away from theory? In this question a distinction is implied between knowledge and knowing; the latter is thinking, understanding, and demands present consciousness, while the former term designates much not directly related to or in present consciousness.³

As constituting this 'scientific knowing,' first, there is normally a consciousness of the symbol; this is either perceived or, in silent thinking, presented as a symbol concept. But the symbols both have a meaning—they are not merely empty formulæ—and stand either for transcendent objects, qualities, etc., or for the technical operations of arithmetic and the calculus. This distinction between meaning and object symbolized is quite necessary and is justified, first, I believe, by its analogy to the distinction between the 'content' and the object of perception; in the judgment the *meaning* of the symbols is the '*content*.' But, secondly, that a meaning is present and distinct from the object is shown by the fact that the symbols are *understood*; the symbolized judgment is an experience or event within *subjective limits*, though referring beyond itself to an object.

What, now, is the *status* of the meaning of those symbols which at the same time that they are 'associated' with this, also stand for transcendent objects, etc.? In answer thereto it may be said that, in general, this status as well as the extent to which there is a consciousness of the symbols will vary with the degree of attention. Granted, in the first place, that this is directed to the meaning, as constituting this there may in some cases be *images* in terms ul-

³The following account of the psychology of scientific knowing may be compared with the views expressed by James, 'Psychology,' Vol. I., Chap IX., 'The Stream of Thought,' and by Hobhouse, 'The Theory of Knowledge,' pp. 101-113, and especially with the results presented by Binet, in his '*L'étude expérimentale de l'intelligence*,' Paris, 1903; with these it is in essential agreement, yet it is also an independent analysis.

mately of visual or muscular or some other kind of perception. If these images are present they do not, however, constitute the meaning completely and adequately; rather, there is always a residue of this which can not be so 'imaged.' This, indeed, forms an essential and distinguishing characteristic of scientific knowing and is, perhaps, its most important justification and value, in that, in accordance with it meanings are developed which can not be imaged in their entirety and transcendent relations are known which can be known in no other way than by these symbolic methods.

So far, then, as images are thus inadequate, there must be granted a *second type of meaning*, for which it is frankly impossible to form images in terms of any sense, even though there be both sufficient time and attention allowed for this attempt. But, thirdly, there is the more usual case, equally interesting and valuable, however, for the psychology of scientific knowing, in which, because either of familiarity with and habitual use of the symbolic methods of thinking or because of greater attention to the symbols, or both, the scientist neither needs to nor, in fact, does call up images even though, were more time given, it might be quite possible to do this to a limited extent.

In any of these instances, then, in which images are either inadequate or wholly absent and yet meanings are undeniably present, since a knowing, understanding and thinking process is taking place, the question is of importance as to what the manner and character of these may be.

There are two possibilities here, the limits of which in any particular case it would be difficult to fix exactly without experimental determination, but both of which can be established in a general way by simple careful observation of one's own 'symbolic knowing' and by the interrogation of others. The first is, that at the same time that there is a perception or fairly clearly marked image of the symbols or signs the meaning is present as in the fringe of consciousness; the second, an extreme and perhaps limiting case, that the meaning is not in consciousness at all. This fits that type particularly well in which 'knowing' by a certain system of symbolic methods has become habitual. It is psychologically and perhaps paradoxically an 'economy of thought' that the meaning, in such 'symbolic knowing,' should be either in whole or at least in part below the threshold; and it is further possible that this economy itself depends on this very characteristic, that it is required not that meanings be either imaged or in the fringe, but only that an awareness of the symbols be present, in order that thinking, and knowing, and understanding shall be taking place. Accordingly, the principle may be stated, that what we think is not identical with what

we image, and—may I venture this?—that thinking is not wholly identical with consciousness. It may be, in fact, that, just as the greater part of that which is at present 'our knowledge' is below the threshold, so also can 'thinking' be likewise 'situated,' so that both knowledge and knowing are in part transcendent processes.

However, that they should be this under certain circumstances is quite compatible with, indeed is additional support and evidence for, the mediation of the transcendence of the cognitive act by transcendent relations and events. In the case of thinking and knowing it is, in fact, just such transcendent events within the organism which make up part of the subjective reaction. Under these circumstances the term 'experience' might be used as a genus which would include both conscious and unconscious adjustments, etc., within the individual. But, even then, it would connote that which already has been and might again be 'above the threshold,' and so connected with consciousness. However, as a possible exception to this last, but yet suggested by and in general accordance with this 'status' of knowing, as presented above, it may be that certain meanings arise not by abstraction from perception, or from images, or even from the 'fringe,' but without our consciousness and through the working of external transcendent elements on those of the organism, and that they then emerge into consciousness as those concepts, etc., which are sometimes held to be regulative and '*a priori*,' and are perhaps of a non-imageable form.

But, to return to our analysis, the following different 'aspects' to or constituents of the knowing process can now be distinguished; first, the series of symbols; second, the meaning, associated with the symbols, and identical with the content of thought, analogous to the 'content' of perception. This content may be present as imageable or not-imageable, either in the fringe or not, or as 'below the threshold,' the relative amount of each one of these varying with the circumstances and with individuals.

Is it possible, now, to discover still another, a third, aspect? That there is this, comes *a fortiori*, first, from the fact of those conditions which are both necessary for the success of alogical knowledge and the ground and means of this; and, second, from the character of perception and its object. The transcendent, which, through one or more of its characteristics of causal regularity, etc., is such a ground, and means, and mediator, is, by virtue of these very relationships to knowledge and knowing, also their object; it is the *object known* in that knowing process which consists in any present use of the universal judgments of physical science, be they 'empirical,' or abstract laws in equational form, and accordingly it is to be distinguished from the *content*. This last is identical with the subjective

thinking act, is derived from the symbols which formulate it, constitutes their meaning, and takes place as the subjective reaction excited by the presentation of the symbols as they recur in the reasoning process. The object is accordingly that which the symbols symbolize, that which the meanings denote as they transcend themselves, that which they imply logically, that, too, which is a causal element or group in that which brings about success and is the ontological justification of induction. As known in this way the object is both 'beyond' and yet 'in' the meaning: as standing in *this* relation the two form a certain and very definite kind of *unity*, not one in which, as 'in an infinite night all cows are black,' nor one to be called advantageously an all-containing and, perhaps, all-difference-annihilating 'experience,' but one in which there are diverse elements, both transcendent and immanent, *related logically*. As characteristic of this relation between the elements of the transcendent manifold and those of the content, identical as it is with transcendence and implication from one standpoint, and with causal mediation from another, there is a determinateness and unequivocalness which constitute correspondence.

Known in this way, then, are the things, qualities, etc., of simple perception, or of that made possible by the use of instruments and theory: known are the transcendent relations and events, the permanence and causal uniformity, even the unalterability, the independence, the difference in kind, with this knowledge in some cases made possible only by the symbolic methods employed. But just as this permanence and uniformity, necessary for success, can be found only in a transcendent, so is it in turn found that all those characteristics which are demanded of this make it necessary to regard both space and time as themselves transcendent. That which is implied for the whole is implied also for the parts necessary to that whole. Accordingly, in the mathematical formulation of this knowledge symbols appear for both space and time; to these the content both of perception and of scientific knowing refers.

Since the transcendent is known in this way as a manifold of elements in *various relations*, by means of which, *alone*, certain necessary characteristics can be obtained, is it, therefore, *such* a unity that, because it is also related to knowing in a very definite way, the two together, transcendent and individual experience, form an 'absolute'? To this it may be replied that, so far as there are relations, there is also, admittedly, some kind of unity and some dependence, although these may be to just the extent of those relations. But, secondly, although of course such a unity may be termed an 'absolute,' and though it may have characteristics which the parts have not, nevertheless as an 'absolute' it plays a rôle not different from that

which the *modest unity*, given by these implicative and other relations between the transcendent and individual experience, itself plays. It is, however, *to a certain extent* such an absolute that is invoked by the pure empiricist when he appeals to an all-including experience, the experience, namely, which has been found to bear the same relations to individual experience as *this plus* its alogical implications, etc., does to itself. Accordingly, to call such a whole, because of the relation-given unity of its parts, the Absolute or Experience, etc., is to make a difference in terms which makes no difference in reality. In any case there is always present an alogical dualism between what has been called in these articles the transcendent and the immanent, which relation, not itself logical, may be, and perhaps always is, stated propositionally in essentially the same logical form.

However, the existence of such a relation, whose details have been developed and presented in these articles, although identical with a unification, does not, so far as it is present, either make it possible or demand that either the transcendent or this *plus* individual experience should be imaged as an at bottom qualitatively similar and homogeneous whole. Notwithstanding that certain relations, etc., as *known* by scientific symbolic methods, can not be imaged, the attempt is, however, frequently made, and is perhaps almost unavoidable, for certain psychological reasons, to image the whole as like in kind to some part which can be imaged. Something like this is, indeed, attempted when, for example, the whole transcendent is 'reduced' to the likeness of 'undifferentiated experience,' or of 'meaning,' or of consciousness, etc., and it is in this way that certain types of ontology originate. These may be legitimate enough, first, so far as they are conditioned by certain major postulates, made necessarily without proof, and due in each case to some emotionally rooted preference; and, second, so far as they give internally consistent systems. But they are ontologies which, presented in different sets of terms, do not make a difference either with scientific knowledge and knowing, or with action based on these, or with their outcome in success or failure. This is shown by the fact that, whatever may be the type-phenomenon to which the whole is reduced, nevertheless the propositionally stated logic of the *real alogical* differences and relations among transcendent elements themselves, and between these and individual conscious experience, is essentially the same in all. It is this *logical sameness* that persists in the ontologies as they differ, and it is in this, too, that that knowledge consists whose outcome, in success or failure, as a means of readjustment, may condition the very possibility of further experiences. For this reason, also, and in this respect, is this knowledge inde-

pendent of any one ontology, and the former important, the latter not. But this is not to say that, for other action, based on other motives, these ontologies are not important and do not make a difference, or that some one may not be true and the others false.

Accordingly, as that which is always a term in the propositionally and so logically expressed real alogical relations of 'knowing' to that which is 'other than' and 'beyond' it, it is upon the peculiar and distinctive characteristics of the *transcendent* that knowledge and knowing depend. For *these* consciousness is not a sufficient, though it may be a necessary, condition. Their structure and nature can not be stated in such simple terms as, for example, that the object known is either like, or 'contained in' consciousness, or is a function of this. Rather, as it has been my purpose to demonstrate, this structure is complex and involved and yet can be stated fairly definitely.

The particular species of knowledge, however, which has been used as the subject of our analyses, is the alogical, as including perception, etc., and scientific knowing. From this there was distinguished at the very outset, as the means for the satisfaction of a *different* need, namely, consistency, another species, logical knowledge. Genetically, the alogical may seem to have preceded the purely logical; conversely, now, the latter may serve as a means to the satisfaction of some more ultimate alogical end where success is the goal. Is not the logical, therefore, either to be reduced to, or has it not been abstracted from, the alogical? To the last question the reply may be 'yes,' to the first 'no'; for successful knowledge is a matter of twofold, of two-dimensional, implication, alogical and logical. Springing from different 'roots,' and with both necessary to success, and though the latter may have been abstracted from that in which the alogical element was also present, the two are and remain *distinct*, yet coexistent, elements.

Finally, and to complete our scheme: Whence the needs for which there is demanded a readjustment, satisfactory and successful? And the answer is: That, just as the need of satisfaction is not the satisfaction of the need, so is the source of the need not the need itself; but that the transcendent which is the means of satisfaction is also the source of the need of this. The need arises in conflict, the satisfaction rests in harmony.

EDWARD G. SPAULDING.

PRINCETON UNIVERSITY.

SOCIETIES

THE YALE MEETING OF EXPERIMENTAL PSYCHOLOGISTS

THE third annual meeting of the Experimental Psychologists was held at the Yale laboratory during the Easter recess. As in previous years the sessions were of a wholly informal character, and the discussions were freely participated in by the auditors. Professor Judd acted as chairman throughout the meeting. The visitors were entertained by the Yale department of philosophy, at luncheon, at dinner and at a smoker.

The sessions were devoted chiefly to a detailed statement of the work in progress at the various laboratories represented. Professor J. R. Angell communicated a report by Drs. Harvey Carr and Jessie B. Allen, which dealt with the relation of accommodation and convergence to the perception of depth. This paper described two cases in which the normal physiological connection between accommodation and convergence was not present. One of the subjects possessed the capacity to vary her accommodation at will without any concomitant change of convergence,—various controls introduced by the experimenters leave no doubt as to the existence of this state of affairs. It was found that this subject's perception of depth was a function of accommodation, and was not effectively influenced by changes of convergence. She not only perceived distances correlate with the successive shiftings of accommodation, but she had an illusion of movement in the third dimension during a series of accommodations upon points in the median plane, the convergence remaining unchanged throughout. The other subject did not possess voluntary control of her ocular adjustments in such high degree; her estimations of distance were uncertain and unreliable even when secondary criteria were present, as, *e. g.*, on the golf-links. The authors suggested that the prevailing disagreement among investigators of this general problem may be due to the fact that the relative efficiency of the muscular adjustment of accommodation and convergence is an individual variant. This paper aroused an interesting discussion, which was led by Professor Heinrich, of Krakau, Austria. Professor A. H. Pierce read a paper on the 'Stereoscopic Limitations of Untrained Vision.' Having found that untrained observers frequently experience difficulty in perceiving stereoscopic solidity, Professor Pierce undertook an investigation of the problem, employing photographic stereograms of the Schroeder stair-model. When the stereograms were reversed and mounted so

as to produce the overhanging-cornice effect, only 5 per cent. of the observers obtained this result without a suggestion from the experimenter. A detailed examination of ten observers indicated that the failure was due to one or other of the following causes, normal or corrected vision being assumed: persistent neglect of one image, defective muscular adjustment, absence of central fusion, and apperceptive disturbance due to preperception. Professor Dodge described an investigation of the relation between the adequate time of exposure and the character of the preexposure field. When the difference between the illuminations of the preexposure and the exposure fields is sufficiently great, the limen may be reduced to 1σ ; when the illuminations are approximately equal the limen is more than 10σ . While, if the prefixation field is itself a word or even an irregular group of lines, the limen increases to 50σ . Under the last-mentioned circumstances the complete 'clearing-up' process lasts approximately 100σ . It follows, then, that an adequate tachistoscopic exposure depends not merely upon temporal conditions, but also upon the character of the preexposure and postexposure fields.

Mr. H. N. Loomis reported an investigation of the familiar size-weight illusion. The apparatus was so arranged as to record the lifting movements of the two hands, and the experiment was varied by the substitution of a spring for the weight. It was found that there was a characteristic type of movement for each weight, and that characteristic modifications of the movement curve resulted from practise. Mr. Frank N. Freeman reported an investigation of writing movements; an ingenious device recorded the variations of motor rapidity and of pressure exerted during the writing. The study is not yet completed. Mr. E. H. Cameron described his investigation of the voluntary production of tones under varying conditions of attention. Graphic records of sung tones were obtained by means of a species of phonautograph. Distracting tones were introduced and their effects were studied. Tones are not sung at a uniform pitch even when no distraction is present; their pitch oscillates somewhat rhythmically, but tending in a general downward direction. Distracting tones are most effective when inharmonious with the sung tone; they may cause the latter to vary in the direction of the distracting tone, or in the opposite direction. Tones sung under conditions of distraction were usually harmonious with the distracting tone.

The reports from the various laboratories represented at the meeting were for the most part a description of work still in progress; for this reason the emphasis fell upon the demarcation of the problems and upon details of method and of apparatus. In some instances, however, it was possible to make a preliminary statement

of results. Professor Titchener reported that the work in progress at Cornell is concerned with an attempt to obtain a more accurate introspective account of the feelings and of certain organic complexes. This work has been hampered by the difficulty of devising adequate methods, but satisfactory progress is now being made. The problem of mental ability has also been attacked. Professor Sanford described the tendency of the work at Clark as being toward the psychological aspects of learning, or acquisition of motor and intellectual skill of various sorts. An attempt is being made to obtain as true a picture as possible of the psychology of typewriting, and to discover how the picture changes as the learner advances. The psychological aspects of chess-playing have been studied by introspection (several subjects learned the game) and by a questionnaire addressed to experienced players. Other problems have dealt with the psychology of number-guessing, and of reasoning as illustrated in the solution of simple arithmetical and other problems; work on the literature of reaction-times is also in progress. Dr. Porter described a study of reasoning in *dementia precox*, where puzzles, mazes and the like have been employed. He also outlined a continuation of his work on adaptive modifications of the web-building instinct of spiders.

Professor Woodworth reported that the following investigations are in progress at Columbia: the relation between the time and the accuracy of discrimination; the perceptual factors in reading; the psychology of stuttering; the possibility of modifying the behavior of paramœcium: the psychology of language (the causes of phonetic changes, and the possibility of testing rhetorical and literary excellence by the statistical method); the influence of posture (standing, sitting, lying) upon mental efficiency; the relation of intensity, area and duration of stimulus to reaction-time; individual variation of sensitivity to color-saturation; the perception of form in indirect vision; right and left handedness. In several instances these investigations have reached a stage where it is possible to make a general statement of results, but limitation of space forbids a more detailed presentation here. Professor Woodworth has been engaged upon a study of the mental content which immediately precedes the initiation of voluntary movement. It was found that neither kinaesthetic nor other imagery is invariably present, and that the complete determination of the movement is not given in the conscious content immediately preceding the movement. Professor Holt described investigations of auditory localization, of the relation between depth perception and ocular convergence, and of the distribution of retinal sensitivity in the neighborhood of the blind-spot. Dr. Baird outlined work being done in the Johns Hopkins laboratory upon the

cutaneous perception of movement, upon the effect of weight upon judgments of size, upon the relation between double-images and depth perception, and upon macular and extramacular color vision.

The closing session was devoted to demonstrations of apparatus and of methods. The visitors were shown through the laboratory from workshop to garret. Professor Judd demonstrated the apparatus and methods employed in his beginners' course and in his kinetoscopic investigation of eye movements. Many interesting devices were exhibited and many helpful suggestions were thrown out. Professor Dodge demonstrated a most ingenious exposure apparatus, the essential principle of which is a transparent mirror. This apparatus possesses the following advantages: it is simultaneous, noiseless, and shows neither movement nor other distracting features; the illumination of the fields, and the fixation-spot, are capable of wide variation; the apparatus may be used either monocularly or binocularly. It may be employed for experiments in color-mixing, in after-images, etc. This apparatus will soon be put upon the market. The apparatus and methods employed in the investigations of Messrs. Cameron, Freeman and Loomis were demonstrated in detail.

The plan of standardizing certain sensory tests was discussed, but no action was taken. Professor Witmer's invitation to hold the next meeting at the University of Pennsylvania was accepted.

J. W. BAIRD.

JOHNS HOPKINS UNIVERSITY.

REVIEWS AND ABSTRACTS OF LITERATURE

The Religion of Ancient Greece. JANE ELLEN HARRISON. London: Archibald Constable & Co. 1905. Pp. 66.

This admirable little volume belongs to the series 'Religions Ancient and Modern.' It is described by its author as "an inquiry into the nature of Greek religion; an attempt to see whence it came and whither it tended, how it resembles and how it differs from other religions. Especially its object is to ask and, if it may be, to answer the question: What in Greek religion is characteristically Greek?"

The author distinguishes the two factors in religion, ritual and mythology, and discusses each in turn. An attempt is made to uncover the successive strata of Pelasgian, Hellenic and foreign elements and to characterize each, as well as to trace the results of fusion. To the student of philosophy the most interesting portions of the book will doubtless be those relating to the mysteries, to the influence of Pelasgian and Orphic ritual upon the Greek philosophers, notably Xenophanes and Plato, and to the moralization of the Hellenic cult-worship by the importation of an eschatology originally foreign to it.

It would be manifestly unfair to criticize this volume by itself, as it embodies in brief the conclusions arrived at in the author's larger work entitled 'Prolegomena to the Study of Greek Religion.' The researches of the last decade have completely changed the discipline in question, but have left a vast number of the most important questions unsolved. Hence any statement made at present must be preliminary and tentative. This the author herself frankly acknowledges. Yet it may be said that the present volume is by far the best brief exposition of what we now know of Greek religion.

W. A. HEIDEL.

WESLEYAN UNIVERSITY.

The Place of Science in Modern Civilization. THORSTEIN VEBLEN. *The American Journal of Sociology*, Vol. XI., No. 5, March, 1906. Pp. 585-609.

Few of all the problems involved in the current controversy over pragmatism are felt by all parties thereto to be so crucial for the 'new philosophy' as that of the motivation and the criteria of 'pure science.' Professor Veblen's paper is an interesting and important contribution to this phase of the discussion, treating of the problem, as it does, consistently and with authority from the cultural point of view.

Modern civilization is peculiarly matter of fact and, in consistency with this character, its final appeal on any large question which is to be disposed of for good and all is taken to the scientist rather than to 'the lawyer, the duelist, the priest, the moralist or the college of heraldry.' How, then, "has this cult of science arisen? What are its cultural antecedents? How far is it in consonance with hereditary human nature? And, what is the nature of its hold on the convictions of civilized men?"

Psychologists of the pragmatic school declare that 'the idea is essentially active' and presentative of an end toward which the agent strives. However, all pragmatic intelligence has its roots in tropisms and instincts which can be called pragmatic only by a figure of speech, since they look to no conscious end, nor are they attended with any feeling of personal agency. "On the human plane, intelligence (the selective effect of inhibitive complication) may throw the response [to stimulus] into the form of a reasoned line of conduct looking to an outcome that shall be expedient for the agent. This is naïve pragmatism of the developed kind. . . . But that is not all. The inhibitive nervous complication may detach another chain of response to the given stimulus, which does not spend itself in a line of motor conduct and does not fall into a system of uses." This collateral 'excess discharge' is the source of such cultural phenomena as play in man (as also in animals), mythology and folklore, the development of which is effected by an 'irrelevant attention' sustained by 'idle curiosity,' which contrasts markedly with the 'pragmatic attention' set going by the same environing object but sustained by the more self-conscious interest in ways and means of gaining ends.

Accordingly, in each successive stage of the evolution of culture we find two sorts of knowledge current, the pragmatic or teleological, and the

idle or disinterested. (Professor Veblen announces at this point that he intends to use the term 'pragmatic' more narrowly than is now the custom, so as to denote such knowledge as is 'designed to serve an expedient end for the knower' in contradistinction to 'idle learning.')

"The pragmatic knowledge of the early days differs scarcely at all in character from that of the maturest phases of culture. Its highest achievements in the direction of systematic formulation consist of didactic exhortations to thrift, prudence, equanimity and shrewd management—a body of maxims of expedient conduct. In this field there is scarcely a degree of advance from Confucius to Samuel Smiles." On the other hand, the extraordinary development of human knowledge, from primitive savagery down and including modern science, has for the most part been achieved through 'irrelevant attention' under the guidance of 'idle curiosity.' In savagery we have under this head myths and legends having no pragmatic value of necessity, though they may incidentally 'have a practical value imputed to them as a ground of superstitious observances.' Among peaceable communities of the savage culture 'the myths, on the one hand, and the work-day knowledge of uses, materials, appliances and expedients, on the other hand, may be nearly independent of one another.' So, among ourselves, 'pure science,' like savage myth-making, finds its motivation in interests lying apart from any thought of technology or pragmatism.

This independence is, however, not complete. Myth-making is the work of idle curiosity, but idle curiosity has its sense of dramatic necessity, and this controls its course. In working out its constructions, its alleged 'interpretations' of the facts of nature, idle curiosity conceives these latter in an animistic way and construes their behavior as a reasoned procedure looking to their own advantage or looking to the achievement of some end which these objects are conceived to have at heart for reasons of their own. In all this, of course, the conditions, social and other, of the agent's own every-day pragmatic activities must play a leading part. Thus (1) the cosmologies of savagery and lower barbarism are cosmogonies. "Procreation, birth, growth and decay constitute the cycle of postulates within which the dramatized process of natural phenomena run their course; creation is procreation in these archaic theoretical systems, and causation is gestation and birth. The archaic cosmological schemes of Greece, India, Japan, China, Polynesia and America all run to the same general effect on this head." (2) The cosmologies of the higher barbarians of the middle ages "are cast in terms of a feudalistic hierarchy of agents and elements, and the causal nexus between phenomena is conceived animistically after the manner of sympathetic magic. . . . The relation in which the deity or deities [in higher barbarism] are conceived to stand to facts is no longer the relation of progenitor, so much as that of suzerain." In fact, medieval philosophy and science, as developments of the dominating upper-class culture, are shot through and through with pragmatism. Only among the lower orders does the motive of idle curiosity and myth-making survive in its

savage purity and bring forth fruit. (3) With the advent of modern times handicraft workmanship comes more and more to be the type of men's every-day pragmatic efforts, and, accordingly, 'workmanship gradually [supplants] differential dignity as the authoritative canon of scientific truth, even on the higher levels of speculation and research.' The maxims of cause and effect now for the first time hold unquestioned sway. Nevertheless, causes are conceived as 'at work in a quasi-personal manner.' (4) Since in recent times, 'the machine technology has made great advances, the formulations of science have made another move in the direction of impersonal matter of fact.' The dramatic interpretation of natural phenomena has become less anthropomorphic. And yet, although 'by contrast with the pragmatic formulations of worldly wisdom these latter-day theories of the scientists appear highly opaque, impersonal and matter of fact,' still 'taken by themselves they must be admitted . . . to show the constraint of the dramatic prepossessions that once guided the savage myth-makers.' (Professor Veblen in this connection suggests a comparison of the 'ideal of inert magnitudes' set forth in Karl Pearson's 'Grammar of Science' with the tenor of his actual work in later chapters and in his discussions of 'mother right' and related topics in 'The Chances of Death.'

Modern science is, then, essentially dramatic and unpragmatic. The environment in which it flourishes is, it is true, an environment of machine technology, and this environment influences its development inevitably in the same way as feudalism influenced the development of medieval science and as the immediate overbearing importance of the natural phenomena of birth, growth and death in savage life influenced the primitive cosmological schemes. That its results are of use is, nevertheless, for the scientist, in principle, 'wholly a fortuitous and insubstantial coincidence.' Pure science is a matter of 'excess discharge'; technology is a method of pragmatic response to the world of stimulating objects. The discrepancy between idle and pragmatic knowledge is to-day 'wider than ever before.'

Coming now to the third and fourth of the questions proposed above—modern, matter of fact 'pure science,' unpragmatic as it is in its motivation, is, nevertheless, so permeated by the impersonal spirit and tendency of the pragmatic machine technology as to be, despite its great credit and popularity, more or less of a shadow and a blight, subconsciously, upon the souls of men. The long schooling of the race in unpragmatic modes of thought during savagery fixed these ineffaceably so that nowadays not infrequently, "in the most advanced communities and even among the adepts of modern science, there comes up persistently the revulsion of the native savage against the inhumanly dispassionate sweep of the scientific quest. . . . The ideal man and the ideal of human life . . . is neither the finikin skeptic of the laboratory nor the animated slide-rule. The quest of science is relatively new. . . . The normal man, such as his inheritance has made him, has, therefore, good cause to be restive under its dominion."

On Some Difficulties in the Theory of Transfinite Numbers and Order Types. B. RUSSELL. *Proceedings of the London Mathematical Society*, Series 2, Vol. IV., Part 1. Pp. 29-53.

This paper, which was suggested by a paper of Dr. Hobson,¹ aims at a generalization of such contradictions as those of Burali Forti² and of Russell³ and at the introduction of certain distinctions through which Mr. Russell hopes to be able to overcome the present difficulties in the foundations of mathematics.

As to the contradictions, three theories are proposed as offering possible modes of escape. They are (a) the zigzag theory, (b) the theory of limitation of size, (c) the no-classes theory. With each Mr. Russell also presents the difficulties peculiar to it. Thus, the zigzag theory maintains that certain complicated functions do not define classes at all, but we do not know which do and which do not, and the axioms determining this question are very complex. The theory of limitation of size asserts that excessive size is what a class must avoid. Where shall we stop? Is ω illegitimate and are all proper classes finite? And, lastly, the no-classes theory takes the extremely radical standpoint that there are no such existences as classes, relations and functions. Strangely enough, although this view is opposed, as Mr. Russell says, by common sense, although it destroys a great part of Cantor's work, and its working out is so extremely complicated that we are not sure it leaves us even enough for arithmetic, yet at the end of the paper we find a curious paragraph which reads: "From further investigation I now feel hardly any doubt that the no-classes theory affords the complete solution of all the difficulties stated in the first section of this paper."

It may be that this note will be justified, but as we read over Mr. Russell's statement of the contradictions (§ 1) there seem to be some neglected aspects of the problem which also point to a solution, simpler and more complete than any he has suggested. For example, the words *norm*, *property* and *propositional function* are used synonymously (p. 30), but we shall see that norms do not always stand for properties. Thus the contradiction as to cardinals consists in asserting that there is some property such as ' $x = x$ ' common to all entities, and the cardinal number so defined must be the greatest of all cardinal numbers. But Cantor has proved that there is no greatest cardinal number, hence a contradiction. If we accept Aristotle,⁴ however, we can not admit that there is any property common to objects denoted by negative norms such as ' X is a not-man.' Lotze⁵ is emphatic upon this point. There is, then, no property common to all things. The selection here is certainly unfortunate, for if we interpret '=' with Dedekind,⁶ ' $x = x$ ' merely means

¹ Hobson, *Proceedings of the London Mathematical Society*, Series 2, Vol. III., pp. 170-188.

² Burali Forti, 'Rendiconti der Circolo Mathematico di Palermo,' 1897.

³ Russell, 'Principles of Mathematics,' Ch. X., also Appendix B, § 500.

⁴ Aristotle, 'Hermeneutica,' Ch. II.

⁵ Lotze, 'Logic' (Eng. trans.), p. 48.

⁶ Dedekind, 'Was sind und was sollen die Zahlen,' p. 1.

that we have written twice the name of the thing, and one does not have to be even as much of a realist as Mr. Russell (p. 41) professes to be to deny that the number of times the name of an object may be written is any property of the object. The fact that all the contradictions make use of these negative norms is significant. Such a norm is legitimate *as a denoting phrase for an aggregate of terms*, but because of the fact that these terms have no property in common, we can not treat them as though there was a corresponding class concept; the class as one does not exist. So long as the aggregate is dealt with as a mere denoted extension the contradictions do not arise. Hence, although there is no difficulty in using norms and propositional functions as synonymous, some norms do not stand for properties.

Another assumption contained in the development of the contradictions is that a class may be contained in itself as an element. Schönflies⁷ has already objected to this, without, however, making the grounds for his objection very forceful. When a class is an aggregate denoted by a negative norm the objection is evidently justified, for the class, in the only sense in which it could be an element, does not exist. The objection is equally justified when the class is defined by a property. In pure mathematics it is the logical and not the empirical extension of a class which is in question; its extension may be obtained from the class concept by logical division. A class, to be an element of itself, must then be at once identical with and different from itself;⁸ or from a slightly different point of view we may say that the judgment ' $x \in x$ ' is particular, and, as Schröder⁹ has already pointed out, in the logic of intentions particulars are *nichtssagende*. In previous work also Mr. Russell has confused logical and empirical extension, and neglected to exclude the latter from pure logic.¹⁰

The complete implications of these distinctions are worth developing. They free us at least from the generalized type of contradiction given by Mr. Russell (p. 35) and put us in harmony with Cantor's result that there is no greatest cardinal number. They also agree with Mr. Russell's statement (p. 36) that there are some classes such that we can never pretend to collect all their terms, for there will always be a term not in any collection we may have made, although the class is merely simply infinite. This fact seems to me more significant for the theory of the transfinite than Mr. Russell appears to observe.

The last part of Mr. Russell's paper is devoted to a discussion of the axiom on which depends Zermelo's proof¹¹ that every class can be well ordered, and the related multiplicative axiom. The problem is to prove the existence of a *norm* by which we can pick out one term from each

⁷ Schönflies, *Jahresbericht der Deutschen Mathematiker-Vereinigung*, Bd. 15, January, 1906.

⁸ Cf. Schönflies, *loc. cit.*

⁹ Schröder, 'Algebra der Logik,' Bd. 1, p. 100.

¹⁰ Cf. Remarks as to extension of class 'men' and 'featherless biped,' 'Principles of Mathematics,' § 24.

¹¹ *Mathematische Annalen*, Bd. 59, pp. 514-516.

class in any class of classes. On the validity of these axioms depends the possibility of proving the identity of inductive and finite numbers and of establishing the laws of addition, multiplication and exponentiation. They may be true only under certain conditions not yet defined; and with respect to transfinite classes, they are especially under a cloud, the lightening of which, we believe, will come from some such logical considerations as have here been suggested.

HAROLD CHAPMAN BROWN.

HARVARD UNIVERSITY.

JOURNALS AND NEW BOOKS

REVUE PHILOSOPHIQUE. March, 1906. *Le Mensonge du Monde* (pp. 233-267): PAULHAN. - A resumé of writer's metaphysics. The whole universe is a liar incorrigible because all harmony manifested in physical, biological and mental organizations is fictitious, serving only to conceal the real conflict of the elements involved. Harmony is only relative, for all systems, atomic and social alike, are built up to serve certain purposes common to all the elements in the systems; this community of interest is of much less significance than individual differences. When the common end is attained, the system dissolves, *e. g.*, a committee or an organism. Finally, every effort toward an end involves the construction of a fictitious world which is harmonious only with the desire, not with the totality of facts; all religion, politics and personal ambition create such fiction unavoidably. *Sur la philosophie de Renouvier* (pp. 268-293): PILLON. - A critical review of Séailles's presentation of Renouvier's philosophy. Renouvier is shown to have passed through three distinct periods of belief: first, pantheism, then rational phenomenalism and, finally, critical phenomenalism. *Le caractère et le tempérament* (pp. 294-300): RIBÉRY. - In order to get a scientifically useful definition of temperament one must determine what the physiological phases of individuality are. Many students of temperament place too much emphasis upon circulatory and other vegetative processes. "The temperament depends upon the way the nervous system receives external and internal stimuli." "The time is ripe for special studies of temperament" which shall supplant classifications. *Notes et documents: Hystérie et mysticisme* (pp. 301-308): MONTMORAND. - A study of the case of St. Theresa. *Revue critique: Fouillée, Le moralisme de Kant et l'amoralisme contemporain*: J. SEGOND. *Analyses et comptes rendus*: Picard, *La science moderne et son état actuel*: ABEL REY. Duhem, *La théorie physique, son objet et sa structure*: ABEL REY. Ball, *Histoire des mathématiques*: JULES SAGERET. Guastella, *Saggi sulla teoria della cognoscenza Saggio secondo: filosofia della metafisica*: J. SEGOND. Morselli, *Principi di logica*: G. L. DUPRAT. Dumas, *Psychologie de deux messies positivistes, Saint-Simon et Auguste Comte*: G. R. D'ALLONNES. Elkin, *Hume: The Relation of the Treatise*

of Human Nature (Book I.) to the Inquiry concerning Human Understanding: F. PILLON. *Revue des périodiques étrangers*.

REVUE PHILOSOPHIQUE. April, 1906. *La psychologie de l'adolescence* (pp. 345-377): G. COMPAYRÉ. — A review of Stanley Hall's 'Adolescence.' *Esquisse d'une moral positive* (pp. 378-390): G. BELOT. — An outline of a system of ethics, stated in forty-one articles. The moral problem is viewed in two aspects: that of rationality, whereby the ethical attitude is compared to the scientific one; and that of 'reality,' whereby the content of the ethical judgment is determined. The former standpoint yields the antinomy of social and individual obligation, which is solved by the fact that rationality itself is essentially social; desire to live in society is a practical postulate of ethical reasoning which accounts for the compulsory character of ethical principles. *Le rôle social de l'art* (pp. 391-409): P. GAULTIER. — It is an error to suppose that art ought to subserve merely social ends: art is social only because of what it can give in the way of feelings and sentiments. The power of art lies wholly in its charms, but these would vanish if art were forced to do duty for something non-artistic. Indirectly, though, what art expresses has high social efficiency. *Notes et documents*: Remarks on a case of association of ideas. *Analyses et comptes rendus*: Decharme, *La critique des traditions religieuses chez les Grecs*: F. PICAUVET. Boutard, *Lamennais, sa vie et ses Doctrines*: F. PILLON. Gay, *L'amour-propre psychologique en religion*: A. GODFERNAUX. Sterrett, *The Freedom of Authority*: L. ARRÉAT. Binet, *L'âme et le corps*: L. DUGAS. Paulhan, *Les mensonges du caractère*: P. MALAPERT. *Castex, La douleur physique*: G. L. DUPRAT. Small, *General Sociology*: G. L. DUPRAT. Bonnano, *Filosofia del diritto penale*: G. RICHARD. Carreras y Artau, *Filosofia del Derecho en el Quijote*: J. PÉRÈS. Senchet, *Liberté du travail et solidarité vitale*: G. RICHARD. *Revue des périodiques étrangers*.

Biervliet, J. Van. *Causeries psychologiques, deuxième série*. Paris: Felix Alcan. 1906. Pp. 165. 3 fr.

Galton and Schuster. *Noteworthy Families (Modern Science)*. London: John Murray. 1906. Pp. xlii + 96. 6s. net.

Horneffer, August. *Nietzsche als Moralist und Schriftsteller*. Jena: Eugen Diederichs. 1906. Pp. 106.

Jerusalem, W. *Wege und Ziele der Aesthetik*. Sonderabdruck. Vienna and Leipzig: W. Braunmüller. 1906. Pp. 39.

Lipps, G. F. *Die psychischen Massmethoden*. Braunschweig: Vieweg und Sohn. 1906. Pp. x + 151. 3.50 M.

Lodge, Oliver. *Life and Matter*. A Criticism of Professor Haeckel's 'Riddle of the Universe.' London: Williams and Norgate. 1905. Pp. ix + 200. 2s. 6d. net.

Petrumkevich, Alexander. *The Freedom of the Will*. A Study in Materialism.

Roland, W. v. *Die Willensfreiheit und ihre Gegner*. Leipzig: Duncker und Humboldt. 1905. Pp. ii + 171. 4 M.

Saleeby, C. W. *Evolution the Master-key*. London: Harper and Brothers. 1906. Pp. viii + 364. 7s. 6d.

NOTES AND NEWS

THE following is from the *Athenæum* of June 2: "An excellent article on 'The Origin and Development of Sufism' appears in the April *Journal of the Royal Asiatic Society*. The author, Mr. Reynold Nicholson, thinks that though quietism and mysticism were not unknown to the earliest Mohammedans, a complete change took place in this respect about 800 A.D., and that this must be attributed to the influence of the Greek mystics, as exemplified by the Christian Gnostics and the pagan Neo-Platonists. . . . The more speculative features of Sufism were, as Mr. Nicholson clearly shows, taken straight from the later Greek philosophy, which no doubt found congenial soil in the minds of the Persians, who were as Aryan as the first founders of philosophy."

ACCORDING to the *British Medical Journal*, a general institute of psychology is to be established in Paris at an early date. The institute will be devoted largely to the study of phenomena of subconsciousness, the causes of criminality and means for combating social evils. The plan owes its initiation to Professors Brouardel, d'Arsonval and Gariel, and MM. Boutroux, Giard and A. Picard.

THE death is reported of Hermann Obst, the distinguished anthropologist. He helped to found the Völkermuseum, of Leipzig, and was reputed to be one of the chief authorities on Asiatic races.

DR. KNIGHT DUNLAP, instructor in psychology at the University of California, has been elected instructor in psychology at the Johns Hopkins University.

DR. KARL ROBERT EDOUARD VON HARTMAN, known for his philosophical and literary publications, died at Berlin, on June 6, at the age of sixty-four years.

IT is reported that the Andover Theological Seminary is likely to be merged with the divinity school of Harvard University. Andover has considerable endowments, but only fourteen students.

M. PIERRE JANET, professor of experimental psychology in the Collège de France, has been appointed lecturer at Harvard University next year, and will give a course on the symptoms of hysteria.

SWAN SONNENSCHN EIN AND Co. have published a second edition of Mr. C. H. Hinton's book on the fourth dimension. The present edition contains a new chapter of twenty-three pages on a language of space. The new chapter is also published separately.

THE Clarendon Press is bringing out 'An Introduction to Logic,' by Mr. H. W. B. Joseph, fellow and tutor of New College.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

REALISM AND PRAGMATISM¹

AN acquaintance with the prevailing ambiguity in philosophical terminology prepares us in advance to find that the term realism has a number of diverse connotations. In this case, however, the diversity is offset, in a measure, by a certain degree of unanimity. All forms of realism appear to agree in the assertion that the consciousness of the individual is not a constituent element of extramental objects. The realism with which we are specifically concerned asserts, moreover, that in experience such objects may be presented to us precisely as they are; in other words, that the qualities which are revealed to us in experience inhere in, or belong to, these objects independent of the fact that they are known.

For the sake of brevity I shall assume without argument the contention that conscious states are not constitutive of extramental realities, but that the two are numerically distinct. This much being granted, we at once reach the central question of realism if we inquire into the nature of the conscious processes involved in the attainment of knowledge. It appears, *prima facie*, that there are two modes of knowing, designated usually as sensation and thought, and more descriptively by James as 'acquaintance-with' and 'knowledge-about.' The distinction usually drawn between the two will be sufficiently described for our purposes if we say that in the former the object of awareness is supposed to be a modification of the conscious state itself, while in the latter it is not.

That this distinction is insufficient as a final statement of the facts is a conviction which is apparently gaining ground at the present time. To this conviction we owe the recent attempts to reinterpret the concept of consciousness. So far as realism is directly concerned, the issue thus raised is in a sense a very simple one. It has reference solely to that form of knowing which was just now indicated by the

¹ Read before the Western Philosophical Association, at Madison, Wisconsin, April, 1906, as a contribution to a discussion of the topic: 'Recent Arguments for Realism, with Special Reference to the Relations of Realism and Pragmatism.'

term 'acquaintance-with.' Among contemporary realists some appear to regard 'acquaintance-with' and 'knowledge-about' as distinct and irreducible forms of knowing, while others attempt to reduce all knowing to the type of 'knowledge-about.'

While this distinction of types is easily made, it seems true that, as a matter of fact, the first type of realism is able to maintain itself only by occasional lapses into the second. Knowing is indeed declared to be of two kinds, but at critical points the two are merged into one. A flagrant illustration of this is found in Locke, who may be regarded as the historical representative of this form of realism. Ideas are stated to be the object of thinking, but the term idea does duty for both conscious state and extramental fact. And of course in so far as 'idea of sensation' is merely a name for such a fact, we have not two kinds of knowing, but only one. In a more subtle form the same confusion may be traced in Hobhouse, who has more recently taken up arms in behalf of this general type of realism. The confusion argues an inherent difficulty in the whole position, as even a brief elaboration will perhaps suffice to show.

In the opening chapters of his 'Theory of Knowledge' Hobhouse presents a vigorous defense of simple apprehension as a unique mode of knowing. Furthermore, it is claimed that simple apprehension brings us face to face with an independent external order. Its differentia, however, is not sought in the fact that the object known is a qualification of a conscious state, but in the fact that it asserts only the present, whereas other states, such as memory, assert what is not present.² In this presentation everything turns upon the phrase 'assertion of the present.' Both 'assertion' and 'present' are ambiguous terms. If the assertion concerns a fact which may properly be described as a qualification of the asserting consciousness itself, then we do indeed have a unique mode of assertion, but it is not the assertion of an extramental fact. On the other hand, if the fact is an extramental fact, then the uniqueness does not pertain to the assertion, but to the fact asserted. The fact is unique because it is present, but the consciousness which takes cognizance of such a fact has no peculiar differentia. And similarly with regard to the term present. 'Present' has an acceptable meaning if used to indicate a qualification of consciousness. But if not used in this sense, the term signifies nothing that is unique in the way of knowing. In fact, no other possible meaning will fit the case. The assertion of the present can not mean the spatially present, for its object may be anything within the range of vision; it can not mean the temporally present, for then it would include objects such as tigers in India or the opposite side of the moon.

² See pp. 15 et seq., 531-6.

The insistence, in short, that simple apprehension is a distinct form of knowing implies that the object known is a qualification of consciousness, whereas this implication is denied by the doctrine that an extramental reality is immediately present. And that, apart from the contradiction involved, this immediate presence of objects is for Hobhouse essentially an arbitrary view, is further evident from the fact that some contents or objects are unquestionably regarded merely as qualifications of consciousness. Of feelings, such as a headache, this is expressly asserted; and the distinction which is recognized between primary and secondary qualities appears to admit of no other interpretation.

It follows, then, that of the two propositions advanced by Hobhouse, one or the other must be abandoned. If we hold to a two-fold form of knowing, we must surrender the direct perception of the external order and label all qualities as secondary; while if we maintain that this direct perception is a fact, we must locate all qualities in the extramental world and resolve the experience of 'acquaintance-with' into that of 'knowledge-about.' In the latter case that which is known is always other than the knowing state; in other words, consciousness as such is completely exhausted in the function of knowing.

Of these alternatives the latter is the one that is adopted by Mr. G. E. Moore, in a comparatively recent article in *Mind*.³ The gist of his contention is that in sense experience, as such, we must distinguish between the (objective) quality and the consciousness of the quality. "When we refer to introspection and try to discover what the sensation of blue is, it is very easy to suppose that we have before us only a single term. The term 'blue' is easy enough to distinguish, but the other element, which I have called consciousness—that which sensation of blue has in common with sensation of green—is extremely difficult to fix. . . . That which makes the sensation of blue a mental fact seems to escape us; it seems, if I may use a metaphor, to be transparent—we look through it and see nothing but the blue; we may be convinced that there is *something*, but *what* it is no philosopher, I think, has yet clearly recognized" (p. 446).

That consciousness is a *what*, a 'stuff' or reality of some sort, differing as to existence from other realities, this writer does not attempt to dispute. Although extremely elusive in introspection, consciousness nevertheless 'can be distinguished if we look attentively enough, and if we know that there is something to look for' (p. 450). His main concern is to eliminate the distinction between 'acquaintance-with' and 'knowledge-about,' as appears unmistak-

³ October, 1903, 'The Refutation of Idealism.'

ably from the following passage: "The awareness which I have maintained to be included in sensation is the very same unique fact which constitutes every kind of knowledge: 'blue' is as much an object, and as little a mere content, of my experience when I experience it, as the most exalted and independent real thing of which I am ever aware" (p. 451).

According to this view, conscious states exist, indeed, but the object known is never a mere qualification of the conscious state itself. This distinction, however, between object and conscious state involves a serious difficulty. As a matter of terminology we may, if we like, designate as object whatever is in any way apprehended in consciousness. But if we do so, it seems necessary, as is urged by Professor Strong,⁴ to acknowledge that objects such as pain are not on the same footing as other objects. If it be asserted that all objects, pain included, possess the essential nature revealed in consciousness, whether they are known or not, this can only mean, in the case of pain, that pain is pain, irrespective of any 'knowledge-about.' It can not mean that pain is pain, independent of all sentiency. And if not, the contention that consciousness is reducible to the type of 'knowledge-about' must be abandoned, and 'acquaintance-with' still remains as a distinct category of experience.

But if Moore's distinction between object and consciousness will not serve to reduce immediate experience to the form of 'knowledge-about,' another resource still remains for this second form of realism. It may be held that Moore's device is insufficient because he does not rid himself of the notion that consciousness is a something which has 'states.' If, however, we avoid this initial fallacy, we may still manage to accomplish the proposed reduction. According to this other view, consciousness is neither a substance nor a quality, but a relation. It is 'a kind of continuum of objects.' This conception assimilates consciousness to other types of existence, such as space, time and species. Consciousness is, in short, simply a name for a certain kind of relation among objects; it is a continuum in which things become representative of one another.

This view, as compared with that of Moore, appears to differ in the fact that it places the emphasis upon the representative function of consciousness. For Moore the experience of 'blue' requires no explanation further than the simple distinction between object and consciousness. For this view, however, a mere 'blue' would apparently be no experience at all. It is an experience only in so far as the blue is representative of some further fact. As a blue it is indeed an object, but not an object for a consciousness, since

⁴ *Mind*, April, 1905, 'Has Mr. Moore Refuted Idealism?'

consciousness is limited by definition to the representative functions of objects.

A very clear presentation, in outline, of this position has been given by Woodbridge⁵ and Montague.⁶ Unfortunately it has not yet been presented in detail, so that criticism must necessarily be tentative. With this proviso, I may venture to note a few points. In the first place, while it is true that this theory reduces all knowing to one type, it is not clear wherein it can lay claim to any special advantage in the case of objects such as pain. And secondly, it seems, in the end, to bring us no nearer to the world of objects than the most extreme form of subjectivism. If blue is nothing to us, except in so far as it is representative of some other fact, and if this other fact in turn derives its entire significance from its reference to a third fact, there seems to be no possibility of escape from the realm of symbols to that of the symbolized. On this basis, objects as known are placed in a position as precarious as that of certain islanders, who were said to eke out a scanty living by washing one another's clothes. There is no starting-point or datum, such as the first general type of realism finds in the experience of 'acquaintance-with.'

Essentially the same conclusion seems to emerge when we approach the subject from a different side. Thus it is stated by Montague: "Air waves stimulate the auditory nerve, and sound is manifested; hydrogen unites with oxygen, and water is manifested—a substance differing from its components both in primary and in secondary qualities. Yet we do not hold that water is subjective and hydrogen and oxygen objective. Why should we hold that sound is more subjective than water?" (p. 315). In this passage it seems to be implied that the quality of sound has no existence apart from the physiological conditions which also determine consciousness. And if the conditions which determine sound coincide with those which determine consciousness, the same must doubtless be inferred in the case of other qualities, such as color, taste and smell. It would seem, then, that the qualities which pertain to objects when the conditions of consciousness are not realized correspond in general to the qualities historically known as primary. But, furthermore, it is obviously necessary to distinguish between the real and the apparent sizes, shapes, etc., of objects, since the apparent size and shape depend upon the accidental conditions of perception. The real size, then, implies a reference to certain standardized conditions of perception. Apparent size is treated as

⁵ This JOURNAL, Vol. II., p. 119, 'The Nature of Consciousness.'

⁶ *Ibid.*, Vol. II., p. 309, 'The Relational Theory of Consciousness and its Realistic Implications.'

a symbol of such reference, *i. e.*, as an indication of what we should see under standard conditions. But since the standard, or criterion, is selected solely with reference to convenience and is not determined by the intrinsic nature of the object, it appears to give no clue whatever to real or absolute size.

It seems necessary, then, to conclude that whether realism recognizes 'acquaintance-with' as a factor in consciousness or limits consciousness to the form of 'knowledge-about,' it fails to make out a case. At this juncture pragmatism offers its services as a mediator. To give to the specific contention of each party a certain measure of justification and to maintain at the same time the fundamental proposition of both that in experience we encounter objects directly and not mere symbols of objects—both these ends, it is held, may be attained by the adoption of a more adequate conception of experience.

From the point of view of pragmatism it may be said that the element of truth in the realism of Hobhouse lies in its recognition of an element or factor in experience other than representative knowing. And yet the truth of the realism of Woodbridge and Montague lies precisely in its doctrine that consciousness is not substantive nor adjectival, but relational. These apparently contradictory assertions may be reconciled by means of a distinction between experience and consciousness, a distinction which realism neglects to make. As we have seen, neither form of realism succeeds in the attempt to lay hold of the object directly. And the reason is that the object in question is essentially a phantom object, enveloped in all the mystery of a ready-made datum. Regarding such an object we can have neither 'acquaintance-with' nor 'knowledge-about.' But the difficulties disappear if in the place of such objects we substitute 'concrete ways of living' as the terminal points in which the conscious relations inhere. In this way objects may be experienced immediately, as the first form of realism contends. On the other hand, if we limit the term consciousness to experiences of an 'essentially dualistic inner constitution,' then all consciousness is relational, as the second form of realism maintains.⁷ Furthermore, it may be asserted that objects in this sense do not depend upon consciousness, but that sense and thought are merely functional differentiations which arise in certain critical situations. The objects or 'concrete ways of living' to which consciousness refers can not be characterized as possessing either sense or thought, as being either subjective or objective. They involve no reference to a beyond, no opposition between agent and external order, no distinction between noumenon and phenomenon. In such an experience we have a bit of ontolog-

⁷ Cf. James: 'Does Consciousness Exist?' *This JOURNAL*, Vol. I., p. 477.

ical reality; it is *reine Erfahrung*, immediate experience, or, if you prefer, a thing; and thus the previous contention that experience gives us reality itself, and not merely a symbol or copy of reality, is in principle sustained.

And the immediate correlate of this doctrine is the proposition that sense and thought are derivative and not ultimate, that physical world and experiencing individual are terms of purely functional import. Upon this proposition pragmatism stakes the issue. In order, therefore, to secure recognition for its claims, pragmatism must show that an account of consciousness in terms of function is adequate; in other words, it must furnish a satisfactory explanation of the origin of consciousness.

For the consideration of the explanation which is offered, we may take as our point of departure the statement that consciousness is 'the function which makes possible the reorganization of the results of a process back into the process itself, thus constituting and preserving the continuity of activity.'⁸ So long as we are on the plane of the concrete ways of living, activity proceeds without hesitation or conflict. But when the process leads to results which are undesirable and unforeseen, it becomes necessary to determine the significance of the total situation. Thus the first unhesitating reaction of the child upon the lighted candle gives place to a process of inquiry as to the precise significance of the stimulus or object, when it is presented a second time. The candle becomes representative of the pain-experience and the reaction is modified accordingly. This function of representation is consciousness, and its work is done as soon as the new significance of the candle has become incorporated in the total situation, so that activity proceeds uninterruptedly as before.

As a final explanation, however, of the origin of consciousness, this presentation is open to serious criticism. If consciousness is merely a name for this revising of the scale of values or for the process by which a readjustment is secured, it obviously implies an antecedent scale of values or a previous adjustment. Every situation is the outcome of a preceding situation, for it is in possession from the outset of a certain adjustment, or of an environment which has acquired its present character as the result of previous struggles and achievements. This is true even of those situations which involve instinctive reactions, for since a philosophy of pure experience can not start out with a nervous mechanism, instinct must be historically a product of conscious endeavor. And for this reason the usual appeal to biological analogy, such as the foregoing illustration

⁸ 'Studies in Logical Theory,' p. 375.

of the child and the candle, merely places the problem of consciousness a step further back.

In view of this fact a dilemma seems inevitable. If we reduce experience down to a completely undifferentiated starting-point in which there are no objects or extraneous factors of any sort, a maladaptation is impossible from the nature of the case. Unless a Fichtean *Anstoss* be postulated, the process can not be got under way. On the other hand, to start with a certain degree of differentiation is likewise a confession of failure. Such a procedure assumes that consciousness has already done its work, for the adjustment with which we start implies that the significance of the various elements within the environment is thoroughly understood or appreciated. We are obliged to assume a foresight of ends or an appreciation of values in terms of activity, antecedent to all experience whatsoever.

But even if we disregard this dilemma, the postulates of consciousness present a further and similar problem. It has been argued, indeed, that these can be derived from antecedent pure experience or concrete ways of living. Thus the postulate of identity is said to be suggested by 'the felt sameness of the continuous conscious life.'⁹ The continuous conscious life, however, can scarcely mean the fragment which is included within the time span of the individual. But if more is intended, there is already a tacit postulation of the validity of memory. And memory, in turn, involves the postulate of identity. The assertion that there is a 'felt sameness' or 'felt identity' begs the whole question, for it implies that the identity which is 'felt' is the same sort of fact as a color or a sound. That an entirely unique factor is tacitly introduced, which for pragmatism appears *wie aus der Luft gegriffen*, is a circumstance which is obscured by the ambiguity of a term.

It appears, then, that the endeavor of pragmatism to derive both sense and thought from a more fundamental category is no more successful than the attempts already noted to reduce all 'acquaintance-with' to the category of 'knowledge-about.' That these are not ultimate and irreducible forms of knowing and that experience gives us objects directly, are propositions which still await satisfactory demonstration. This fact, however, does not leave pragmatism without a certain measure of suggestiveness and value. Its insistence upon the instrumental character of sense and thought has done much to make prominent the purposive character of our mental life, and it has thrown light upon the process whereby the character of sense-stimuli becomes differentiated and significant. Experience may properly be regarded as a process of progressive

⁹ Schiller, 'Personal Idealism,' pp. 97, 98.

differentiation, provided that we distinguish between psychological genesis and ontological reality.¹⁰ The error of pragmatism lies, as I venture to think, in the fact that this distinction is disregarded, with the result that we are offered a hypothetical pure experience as the primordial stuff from which all things proceed, and a functional psychology which arrogates to itself the proud rank of queen of the sciences, once held by medieval theology.

In conclusion I may add that this view of knowing as twofold in form is not necessarily final. My contention is only that it is more adequate than those which have been offered as substitutes for it. Doubtless such phrases as 'modifications of consciousness' contain a suggestion of hypostatization. But this is due to historic associations rather than to intrinsic reasons. Whether consciousness is less mysterious from these other points of view seems much open to doubt. And, lastly, the effect of these conclusions upon realism as such is not so much a disproof as a removal of the positive grounds for belief. The conclusions are indeed opposed to the view that extramental realities are the direct object of experience. But whether objects are ever reflected in consciousness as in a mirror is a question which may be raised anew. Or to put the matter more generally, the metaphysics involved in the assumption of a twofold mode of cognition is a question which undeniably affords room for different antecedent possibilities and which remains as a matter for separate treatment.

B. H. BODE.

UNIVERSITY OF WISCONSIN.

THE PERSONAL AND THE INDIVIDUAL

I

IF we were to ask a casual acquaintance what was the difference between a person and an individual, we should probably be told that the two terms were synonymous and might be used interchangeably, a remark easily verified by observation of the popular use of these words. If, on the other hand, we were to take the question to one of the masters who know whose professional engagements had not required an exact determination of the matter, we might be assured there was a difference, but that it existed, as a colleague of mine expressed it, as an 'esthetic annoyance' rather than as an 'intellectual problem.' If, being seriously concerned to ascertain the distinction between the same pair of terms, we interrogated ourselves,

¹⁰ Cf. Baldwin, 'The Limits of Pragmatism,' *Psychological Review*, 1904, p. 30.

we should likely find that no answer was forthcoming because we found ourselves swamped by the highly emotional, ethical and esthetical considerations that play around the central problem of the philosophy of religion. But if we are unwilling to leave the matter in the undetermined condition of the first two classes and yet are forbidden to answer it on its own merits by virtue of the interests that center in it through its connection with our religious faiths and hopes, we may yet find a way of getting the problem stated for discussion if we reconstruct the question in an impersonal form. This is what has been done, and is the sense of the title that stands at the head of this paper. Its further meaning will appear as we proceed.

It will be agreed that any consideration of the personal and the individual must take, in the first place, a psychological form. But to say this does not mean much until we make clear what psychology it is that is to determine the form of the discussion. To make our meaning clear, who could not anticipate what would be said by our ethical individualists who have not advanced in their psychology beyond the atomic standpoint of the eighteenth century? Here you will get either a restatement of the Humean position with its assertion of the passing thought, or the counter-assertion, on the basis of intuition, of a unique datum called the self. Neither empiricism nor rationalism is satisfactory because each, in order to apply its method, must translate back into personal terms the designedly impersonal formulation of the problem as it comes before us here. We do not deny or affirm the existence of a self; our question simply relates to how the personal and the individual come to exist as qualifications of a subject, however that subject may be conceived. Much more fruitful in results will our endeavors be if we adopt from the start the standpoint of social psychology, which has the merit of taking the subject in his concrete connections. The justification of the method must be found in its leading to definable results. But, in a preliminary way, a distinction must be made which frees the social psychologist from the limitations of the biological analogies which have been of service in the study of social phenomena. In its use of the historical method, biology lays stress upon the species as the *prius* of the individual organism, and has emphasized the fact that organic evolution proceeds from the general to the particular. In social psychology, where a similar method is in use, the same general result has been reached. The group precedes and conditions the individual member. But the group, and this is the point to be borne in mind, does not develop along biological lines. According to biology the species contains a certain number of distinct members, all of which belong to the species. The group, on the other hand, may or may not contain distinct sociological units. From the biological stand-

point, the species are exclusive; from the standpoint of social psychology, the groups are, at least partially, mutually inclusive. Hence while the individual must belong to only one species, he may belong to more than one social 'set.' It is this fact that underlies the distinction between the personal and the individual.

II

Before developing this hint, we must look at the group concept a little closer. From the standpoint of structural psychology, the group assumes an institutional form. Structural features are emphasized because the group life is taken in its static aspects. In this point of view, we regard the group in its constitutional forms. Each group differs from every other because it has its own unique constitution. The relation of any one to the group so considered will depend upon whether he 'swears to support the constitution.' It will be noticed that the members of a group do not constitute it what it is; the organization is already present as a fixed and permanent form before any one is comprised within it. The constitution is the organic law of the whole. Any one may adopt it, but such adoption carries in it limitations on the kinds of behavior that are possible within its jurisdiction. It is possible to treat the group in this meaning of it by the statistical method, which is a descriptive, not an explanatory, method, because throughout one counts for one, and for only one, and each one is equal to every other within the same limits.

From the standpoint of functional psychology, the group stands for a set of coordinated ideas, not for a number of juxtaposed individuals. The question of the *locus* of these ideas, in one meaning, is not a functional problem. For if you ask what ideas are without individuals to think them, we are met with the fact that there are no individuals independent of a group which sets its own structural ideas as copies for the thinking these individuals are to do. We must think with others, if we are to think at all. But to think with others means, in part at any rate, to think like others, to think what others think. Our term consciousness emphasizes the social character of all mental process. And it is this organic function of the common ideas, feelings, impulses, etc., that is chiefly emphasized from this point of view.

Now, if we compare these two conceptions of the group, we find an instructive contrast. The institution when taken alone is exclusive, self-sufficient, conservative. It is what it is independent of the number of those who belong to it: America is America, whether there be 60,000,000 or 60,000 Americans. From the other standpoint, however, the reverse of this must be said. The group is a dynamic

concept, which, because it is a conscious process, develops by making explicit the contradictions of its own internal meaning. Unless there were contradictions, there would be neither thought nor motives to thinking. But they are not the contradictions between cognitive processes out of which the personal and the individual develop. For man is not only a thinking being. He is prior to this, and more than it, an active being also. Indeed, he is the latter that he may become the former. It is, consequently, in the ways in which these two related forms of his existence develop that conditions the personal and the individual qualities of any one's life.

III

This interplay of the practical and the theoretical in the development of those qualities we call personal and individual may be illustrated by the commonplaces of psychogenesis. Tarde, Baldwin and Royce have made the term imitation classic in this connection. Imitation is an instinct-feeling that shows itself in the child as a fundamental tendency to certain modes of behavior in response to his total environment. At just what point imitation differentiates itself from the mass of physiological responses as a distinct function of the organism, there is no one willing to say. This much, however, may be asserted, that imitation is distinguished from the class of physiological reflexes with which it is so closely connected in being a *reproductive* and not, as in the other class of facts, a *productive* function. At this point we have also the means of considering the proper relations of instincts and instinct-feelings. In the case of the former, the modes of response are laid down in the organism congenitally, or are acquired by it later by habit, so that, from the standpoint of psychology, we have what Stout calls a sensation-reflex. Instincts are operative within the limits of the psychophysiological arc. In the case of imitation, on the other hand, the form of behavior is determined by a different set of conditions. Like all reflexes, instincts operate for the sake of the adjustments mediated by them. They have a direct survival value. Imitation, however, primarily has reference to the process by which adjustments are brought about. Hence, while imitation implies organic plasticity and susceptibility to movements initiated by stimuli, and, therefore, has some of the characteristics of an *instinct*, it functions for the sake of the enjoyment of doing the thing whatever it is, and, therefore, has some of the characteristics of a *feeling*. In imitation the overt act is a secondary consideration, whereas it is primary in the case of instinct. We are consequently able to point out, what has not been made clear in current discussions of the subject, that the child does not imitate

what he sees others doing, but endeavors to reproduce a state or condition of his own feeling life.¹

With this understanding of what we mean by imitation, we may point out the limits within which it is operative. It is, of course, true that what any given child will do imitatively will depend upon the structure of his social environment. He finds his imitative suggestions in the first place in the home, using the term loosely for the expansive social *milieu* of which the 'home' is the core and center. What he does not experience by way of stimulus to action can not set up responsive movements which are either pleasant or unpleasant. And where there is no feeling, there is no imitation. In this sense, all the child's imitations are determined for him by the environment into which he was born. He is, potentially and actually, from the start a member of a group. It is the life of the group that in the first place, and for so much of his life, comes to expression in what he does and thinks. About all this there will be little dispute. But what we have to ascertain is, how far imitation, thus conditioned, provides the means for the differentiation of thought and action, in the interdependence of which the personal and the individual receive their characteristic developments.

We have suggested already that the sensation-reflex is the type of the most complex psychophysiological life. Theoretically, there is nothing impossible in a sensation-reflex becoming imitative in the absence of competing interests, provided the feeling elements are sufficiently strong to afford satisfaction. Perhaps we may explain in this way the continued gaze of infants at the light in the darkened nursery. The presence of an agreeable reaction may fairly be inferred in those cases where the child follows the light as it is moved about the room. But however that may be, there seems to be little doubt that an imitative element is to be attributed to what are called the random movements of arms and legs, and the gurgling, chuckling sounds of early infancy. This is certainly so if and when they are reproductive actions. The same general principles are adequate to explain so-called 'imitation of others.' Without going into the question, we may stop to remark that the phrase bears on its face a suggestion of the extra-psychological motives that have crept into our treatment of the subject hitherto. Implicitly we have on our hands the standing dispute between realism and idealism, only in a new form. But leaving these considerations aside, we may affirm, from the psychological standpoint, that no one can imitate any one but himself. I can not reproduce, in the way that you can, either

¹ For evidence tending to confirm this account, although from another point of view, the reader may refer to the writer's 'An Analysis of Elementary Psychic Process,' *Psychological Review*, Vol. XII., pp. 166 ff.

your action or your feeling. I can reproduce only my own previous state. And, therefore, we should say that a comparison, *ab extra*, of one set of actions performed by one person with a similar set of actions performed by another, even when there seems to be a causal dependency between them, is not a final determination of the imitative character of the second set of actions, and the method itself may be entirely fallacious. Now, this is what we should expect if, as we have said, imitation is concerned neither with the stimulating agent nor with the effected results of movements, but with the processes through which adjustments are made to determining environments. The causation of imitation lies in the life of feeling. As a matter, however, of colloquial convenience, but never as a matter of scientific accuracy, I may be said to imitate another. What this imports is that the other is a means of suggesting through a social situation the desirability of a certain emotional experience. The only way that any one can affect any other within the same social group is by creating a disturbance of the feeling life which can get its satisfaction, as we anticipate, only in the course of action that we wish to see carried out. The actions in question, that is to say, are only indirectly related to the actions they are said to imitate. It is for this reason, in part, that all imitation is so variable. But we must not lose sight of the fact that imitation tends to secure uniformity of action by putting a premium upon certain types of feeling.

Under certain conditions of the child's life, imitation is also a means to a higher form of conscious activity. Imitation, we have seen, is an individual function operating under the stimulus of a social environment. It is for this reason that no single action, or set of actions, ever exhausts the relations that are established, through imitation, between the agent and his conditioning circumstances. In the same social *milieu*, variations are possible that at times approach, if they do not quite pass beyond, the imitative life. The way for this is paved by 'imperfect imitations,' so-called. Not only, that is, does one not always reproduce the 'copy,' but one does not always succeed in securing the same degree of pleasure from the repeated movements. Indeed, because feeling loses in piquancy by being repeated, one is bound to modify the overt action, and therefore depart from the 'copy,' in order to secure the satisfaction that imitation is intended to mediate. This means, of course, that whenever you find a perfect imitation, the action is no longer imitative, but automatic. The action is now performed as a means to some end outside the process by which it is accomplished. But the *motif* of imitation is found within the process itself. Hence, the only kind of imitation you can have is just this so-called 'imperfect' imitation. Variation, that is to say, is as essential to imitation as is conformity.

This further fact entails a limitation of the imitative process by the development of imitation itself. The more completely and widely imitative the child is, the more directly and necessarily does he become something more than imitative. For, from this point of view, the problem is to seek for greater variation as a means of furthering his own psychic existence. Up to a certain point the environment, through its complexity, supplies the conditions of variation. Baldwin has pointed out the different attitudes assumed by the child toward father, mother, brother, sister.² But the home, neither more nor less than any other single group, does not contain within itself the possibility of fostering, for imitation, an indefinite demand for variety. When interest of the type that lends itself to imitation has lapsed, either or both of two possibilities are open. We may transfer ourselves, for some or all of the time, to another group, which, because of its newness, provides the means of further imitative reaction. The 'far country' is always an escape for the boy who will not be anything but imitative, and his legitimate end is to 'feed swine.' We may, however, remain at home and find within it the means of another than imitative form of activity. The home—or any other group that has been imitatively exhausted—then becomes an ideal rather than a matter-of-fact thing, between which and the actual home of our experience there is contrast enough for the development of our higher ethical and spiritual powers. Either, then, through the experience of contrasted social groups in each of which our life is on an imitative plane, or through the awakening to the ideal which every social group implies but nowhere fully realizes, or through both, the practical and the theoretical come into conflict, and condition, of necessity, the development of those qualities we call personal and individual.

IV

Let us apply the distinctions already made sufficiently clear to the terms under discussion. We have seen in our consideration of imitation two mutually limiting tendencies in the development of mental ability.³ The first is conservative. The community works upon the subject to make him more and more fittingly the vehicle for the expression of its own complex life. From the standpoint of the subject, his reactions are mechanized in conformity to the common type. A premium is placed upon certain forms of behavior, through which the will of the society becomes the law of each one's conduct. The

² 'Social and Ethical Interpretations,' pp. 16 ff.

³ We have chosen to discuss the subject in connection with imitation because if the case for which we are arguing could be made out there, little difficulty would be experienced in maintaining the same position from the standpoint of a more highly developed human subject.

more completely obedient, or—which is the same thing—the more thoroughly imitative, any one becomes, the more does he conform to the life he shares in common with others. The structural elements of the group, as a group, operate as limits determining what any one may or may not regard as constitutional in his own behavior. We play the game within the rules. Society, that is to say, functions in the interests of conduct, of the practical life, and against the interests of thought, of the theoretical life. We are kept within the limits of the meaning already laid down in the group life which, as a matter of self-preservation, we are made to share. Severally, we learn, and of necessity have to acquire the ability to express, what is required of us by the wider inclusive social structure which conditions from the start all we are and are to become. Without such predetermination there is not the slightest possibility of any one existing as human beings are known to exist. This conformity is one of the necessary and inescapable conditions of life. From this point of view we are able to see what is meant by the term personality. To be a person means that the larger life, the common, shared life of the group, comes to a particular expression in each of its members in such a way that the originality of the expression does not subvert, but conserves, the fundamental and primary meaning of the constitution which confers the rights, and sets the limits of personal activity. Personality, we see, then, is a distinctly social quality.

The other tendency, with reference to any given group, is destructive. In the former case we saw that the interests of society depend upon getting the reactions of its members mechanized to the extent of securing conformity to common types and standards of behavior. Mechanism, from this standpoint, is the end of human life. If this were all, moralists would be justified in seeking a calculus, and determinism would be the only defensible ethical doctrine. But we pointed out that because imitation works through feeling, it limits itself and gives rise to a higher, more ideal form of mental functioning. In this point of view mechanism becomes a means, not the end, of human existence. Thought subordinates to its own uses the social situations which determined the subject's former relations. It tends to modify conduct by making reference to another set of actual or ideal conditions. Thought tends to carry the subject beyond the limits of the group by developing other meanings than those constitutionally belonging to it; and requiring other forms of reaction than those socially sanctioned by it. In this way may we conceive the principle of individuality to become operative. Individuality consists in those unique qualities, or unique combinations of common qualities, by which one man is distinguished from

another in the same social group. In this sense we speak of a 'distinguished man,' meaning what we sometimes express otherwise as a 'strong individuality.' Whichever mode of expression we use, we intend to call attention to the fact that the person in question, in some noteworthy features, is *not* like those with whom he associates. Individuality tends to separation from the class. It is a variation.

In conclusion, we see that the personal and the individual are differentiations within a given group. Each expresses a distinct relation of the subject to the total complex within which, for the time, he functions as a part. Neither quality gets its exemplification independently of a social environment as the other term of the relation which, as we have said, each implies. This is readily seen in the case of personality where the subject is taken representatively. So far as this characteristic is concerned, it does not make any difference in kind to your knowledge through which of a given number of subjects you arrive at an acquaintance with the group to which they all belong. Each subject, in this instance, is typical. But the same general fact, although with a different emphasis, is also illustrated by what we call individuality. The relational character is discernible here because individuality involves a contrast which is lacking in personality. The subject, as individual, is reacting, in this case, so as to emphasize differences, not, as before, to maintain similarities. But the differences, wherever in point of origin they may be said to come from, fall within the group which, as we pointed out, conditions from start to finish the life that human beings are necessitated to live. They are differences because, in short, they imply a reference to the communal experiences which personality most effectively expresses. If the personal does not, in itself, require the individual, the individual is impossible without the personal. It is, therefore, the more highly developed character. The subject, in this point of view, is atypical. Individuality of action, in the sense explained, is determined by the whole within which it takes place, and expresses the degree to which the group is capable of modification without ceasing to be what essentially it is. The extent to which this is operative is seen when we consider that the common social life acquires a unique expression in each of its members; no one is the exact reproduction of any other; and, consequently, no one is equally representative of the whole within which all find their life. But as showing the relations of the personal and the individual we have only to remark that both are differentiations whose mutual limitations are mediated in characteristic ways through the social *milieu* which provides the proper conditions for the development of each.

ARTHUR ERNEST DAVIES.

OHIO STATE UNIVERSITY.

DISCUSSION

THE EFFICACY OF THOUGHT

PROFESSOR A. W. MOORE, in his courteous review of my book on 'The Life of Reason,'¹ has pointed out what he feels to be a discrepancy in my language, and perhaps a difficulty in the subject-matter itself, touching a point of very great importance. This point is the sense in which mental facts may be called influential, may have a function or power.

There are many possible readings of this problem, some of which may be distinguished as follows:

1. It is a function of thought to give an intrinsic value to the moment in which it occurs. Thought has an esthetic or ecstatic quality. This function, inefficacious as it is, would suffice to make thought the most important thing in the world.

2. Thought has the power of asserting ideal verities; it has a contemplative and dialectical function. An ephemeral seraph, alone in the universe, might recite the multiplication table and die. His thought would have possessed two ideal functions, one beatifying, the other self-explicative or discursive.

3. Thought may have a transitive but merely cognitive function; it may represent, and mean to represent, some independent fact, as when I say to myself that Cæsar died on the Ides of March. The eventual test of this truth, its consistency with other judgments, its prevalence, its destiny, or its being a thought that would subsist permanently in an organism usefully adapted to a special environment—all this does not enter into the cognitive pretensions of the thought. These are ideal; but as the truth of the thought hangs on the existence of the external fact to which it refers, its truth remains always an assumption from its own point of vantage; though a third person might perhaps have further means of deciding for himself whether that thought had been true or false.

4. Thought may have prophetic scope: it may foretell what is about to take place. This harmony, purely speculative in itself, would, if at all frequent, very much increase the inner wealth and dignity of thought mentioned in 1 and 3.

5. Mingled with prophecy may be desire; and if to confident prophecy and eager desire an eventual verification accrues, the result is a sense of power. Thought is then supposed to have brought about its own realization, and to be responsible for it. This felt efficacy is always moral, or rather magical. It is a power attributed to thought, in its ideal capacity and by virtue of its intent, to bring

¹ This JOURNAL, Vol. III., No. 8.

about what it calls for, as an incantation or an exorcism might do, through empty reaches of time and space.

6. Thought, taken as a psychological existence, might have a causal influence on a succeeding state of mind, quite apart from the ideal burden of either. Thus, a dialectical argument might bring on a headache or (if mental association were directly efficacious) hearing others speak with a certain accent might cause me to hear myself later speaking with the same, no physical links intervening.

7. Thought might be carried on for a while by dialectical progression, the meaning constituting an evolutionary 'force.' The thought might then be transformed into another irrelevant state of mind, as in 6; but a moment later this state of mind might become a cerebral process, which, in turn, might be propagated for a while mechanically, but might finally evaporate out of the physical world altogether, the 'force' of it going to constitute a fresh mental event, either irrelevant or, by preestablished harmony, cognitive of the physical fact that caused it; and so on as before.

8. Thought might be without efficacy, either in its moral or in its existential capacity; yet the bodily function, the instinct or habit, which it accompanied, might involve the maintenance of that thought, or its dialectical development in time. In this case the thought would be so grounded as to vouch for its occasional reappearance, whenever the juncture reoccurred at which it was evoked originally. Thus books, customs and works of art insure the perpetuity of spiritual experience as, in a larger sense, do the unchanged face of nature and the hereditary structure of animals. Thought might still be called efficacious in the only sense, not magical, in which its efficacy would be at all congruous with its intent; namely, through the natural efficacy of the creature whose life it expressed.

As to my personal opinion in this matter, which I am sorry to see Professor Moore finds ambiguously expounded in my book, it is probably plain enough from the above statement of the various possibilities. 1, 2, 3 and 4 describe purely ideal functions of thought, all of which it undoubtedly reaches at certain moments. 5, on the contrary, describes a superstition; yet it is this superstition, clung to by the unreconciled childishness of man, that alone induces anybody to defend the extravagances and confusions of 6 and 7. People wish thought to be mechanically efficacious because they think it would be a *better guide* than the cerebral process which underlies it; yet why a better guide, unless it operated miraculously, by its intent, and not by virtue of some irrelevant evolution of its substance? 8, accordingly, represents the conclusion to which I arrive; and it explains certain phrases which I have not studied to avoid, thinking that their metaphorical character would be obvious to the

reader. We all speak of Malthus's ideas 'governing' the movement of population, yet hardly expect to be accused of maintaining that poor Malthus's hard thinking caused Israel's fecundity or the congestion in our large cities. A thought is said to govern those portions of existence the movement of which it serves to predict or to describe. One may well say that 'reason is vital impulse modified by reflection.' It is certain that when a man 'reflects' his action changes in consequence, just as he turns aside when he 'sees' an obstacle in front of him; but as his seeing was an impression on his organs, without which his fancy would have pictured nothing, and as his turning was an instinct or habit of his organism, without which the image would have signified no danger; so the pause in reflection was a physical event, accompanied by an oscillation of projects in the mind (for reflection can not decide when reflection shall arise, nor how long it shall last, nor what course it shall take). The consequences of reflection are due to its causes, to the competitive impulses in the body, not to the wistful lucubration itself; for this is mere poetry. People's thoughts are most inadequate and choked just when their action is most rapid and urgent. That consciousness is a lyric cry, even in the midst of business, is something which must be felt, perhaps, to be understood; and they that have feeling, let them feel it.

I may add that the ambiguity which others as well as Professor Moore find in my book seems to come, at least in part, from their generously attributing to it loftier pretensions than it ever puts forth. They begin by reading into my words two doctrines which perhaps they think highly of, namely, that the genesis of knowledge is the genesis of things, and that truth is useful illusion; but they soon find that my expressions contradict these doctrines, which I not only never entertained, but can not even conceive. For in assigning any origin to nature we assume another nature operating behind, while it is hard to see how one illusion could be more useful than another in a vacuum; yet if a determinate environment existed, the true idea of it would be determined by what that environment was, not by the uses which the idea of it might have. What I can readily conceive, however, is how puzzled and disappointed a reader must be who begins by taking for a complete cosmogony what is merely a biography of human reason, and how miserably this whole drama of thought must seem to him to end, if it ends in discovering what has always been true.

G. SANTAYANA.

HARVARD UNIVERSITY.

REVIEWS AND ABSTRACTS OF LITERATURE

The Essentials of Spirituality. FELIX ADLER. New York: James Pott & Co. 1905. Pp. 92.

In this little book the author has published four popular addresses which are very readable and elevating in tone. An attempt at defining the concept of spirituality is preceded by a description and criticism of some concrete examples, while the definition aims at establishing an ethically ideal meaning of the term rather than at embracing current usage. The characteristic marks of the spiritual life are 'serenity, a certain inwardness, a measure of saintliness.' It is not mere aspiration, but virtue realized and embodied. "The spiritually-minded person is one who regards whatever he undertakes from the point of view of its hindering or furthering his attainment of the supreme end." Different types of spirituality are involved in the different ways of conceiving of this end. Three conditions of its attainment are explained: (1) Frequent reflective detachment from narrow or practical temporal interests; (2) living in view of the constant possibility of death, in order to appreciate more justly the relative values of life; (3) elimination of subjective egoism, treating self and others alike. The ideal implied in (1) is not that of mystical and abstract, but of concrete, spirituality, which sees facts in their meanings, deeds and affairs in their eternal relationships.

The address on 'The Spiritual Attitude toward one's Neighbor' expounds the doctrine of human equality. Its genesis was from religion, which, however, left it a heritage of peculiar limitations and defects; it has been further stimulated by political constitutions; but it has its adequate ground neither in religion nor in politics. It does not rightly mean equality of gifts or energy, but the essentially human significance and worth of every member of the species, the organic nature of human life and society in which every individual has an important function and deserves recognition. Its sole basis is in the moral law; it is a postulate for the sake of action, and it can be verified only by action, and not by mere facts divorced from action. To act on the principle of the worth of all men is to create and so to discover such worth in abundance.

The paper on 'The Spiritual Attitude toward Oppressors' treats of our attitude toward others' wrong-doing. It must be dynamic rather than quietistic and fatalistic, and while it can admit no such thing as sin apart from the sinner, it must distinguish between the single deed and the entire character of the agent. It involves in order these steps: (1) Check the exhibition of the evil will; (2) give publicity to the offense, and so humiliate the offender; (3) change his environment in order to reform his habits; (4) forgive him, receive him back into fellowship and recognize his positive function. Under (2) it is maintained that the purpose of punishment is purely reformatory, that the permanent breaking of bad habits may require a moment of severe shock, and that the death penalty is without valid ethical ground; the difficulties of passing

judgment on others are also discussed. Our attitude toward oppressors must recognize them as persons, must involve conflict, but must be inspired by benevolent purpose. Conflict inspired only by hatred, egoism or rivalry is not a positive factor in moral progress; this point gives evidence of the validity of our view of spirituality.

The fourth paper, on 'The Two Souls in the Human Breast,' treats mainly of the spiritual attitude toward one's own failings. The attempt is first made to point out how the public exposure of evil is limited in its value. Two kinds of cases are distinguished: (1) those in which guilt must be confessed and expiated because 'publicity is necessary . . . to repair the wrong that has been done to others,' and (2) those in which the evil affects others but indirectly. In the latter class self-revelation is not even allowable; the battle should be confined to one's own inner consciousness. In this connection the formula for the spiritual attitude is not found in the Buddhistic doctrine of Karma, but in the Pauline doctrine of the duality of nature and spirit. For the *material* of the moral life, whether it inclines to positive or negative value, we are not responsible. Neither praise nor blame attaches to us for the existence of our instincts and tendencies, but only for their use, for the elective synthesis we make of them. While natural temperament may oscillate between selfishness and sympathy, moral character reacts upon both these tendencies from the point of view of a unitary principle; and here we have a further justification of the concept of spirituality, which means the dominance of a supreme end that is dynamic, organic, concrete. The chief practical deduction from this question is that on every occasion, whether great or small, regard should be given to the inner principles rather than to the external effects of actions; thus, the great will appear small, and the small will become great in significance. This at once condemns any politic action that is insincere and adherence to custom when principle demands its defiance.

It is a virtue rather than a defect in popular papers when they refrain from a systematic explication of many theoretically important relationships within the field essayed. This is not forgotten even when some of the implications of the author suggest the following criticisms. It is doubtful whether the stress laid upon a conscious relation to an ultimate end recognizes the importance of play, natural life and spontaneous action; even oscillating, tangential modes of conduct may in the long run develop the ultimate end and bring us nearer to it, and perhaps such an end functions mainly and most fruitfully as a subconscious factor. If the spiritual man is never content short of perfection, and yet spirituality is a realized harmony of the soul marked by serenity, here are suggested both the dynamic and the static types of ideal; and especially if the mediation of religion is not employed, the mutual adjustment of these two phases remains to be shown. The apparent divorce of fact and ideal in respect to the doctrine of human equality is overcome by an appeal to moral pragmatism; but the rejection of the religious and political bases of that doctrine as being external to ethics would seem to imply an unwarranted separation of morality from these other life in-

terests. Further, to determine when public exposure of evil is demanded is confessedly difficult. The criterion can hardly be the effect of the mere evil upon others, for the political dishonesty of public men may have but an indirect effect, through a complicated machinery, upon humbler citizens, while their errors of private life may, in a subtle and indefinable manner, sap the spiritual vitality of those most intimate with them. If the test is the effect of the exposure on all concerned, this, be it noticed, is to appeal not to an abstract moral principle, but to the principle of specific utility under the conditions. And surely the author does not mean to maintain that in self-criticism public exposure is wrong while in criticism of others it is right. Again, the outlined view of the relation between the natural and the spiritual, as between the 'given' and the product of our will, needs guarding against an ultimate dualism repugnant alike to theory and to practise. It is admittedly hard to draw a sharp line between the material imposed upon us and our own contributions; we should admit a similar indistinct boundary between the self and other agents, and so insist on a sharing of responsibility. When we consider weak will, low ideals, defective power of intellectual synthesis, and the lack of spirituality partly consequent to these, we must ask how far these are a natural inheritance and how far they are due to the environment. If we abstract the elements *given* through heredity and environment, what is left that is essentially spiritual except the relation—the active relating—of these? But this is intimately and organically connected with the given; the active and the passive are only distinguished aspects of what is essentially one life process, one self. This shows the inadequacy of a dualism of the spiritual and the natural or of any abstract spirituality. Finally, the implied rejection of utility as a criterion of conduct in comparison with an abstract moral principle is to hark back to instinct and habit rather than to use the conscious guidance of a concrete ultimate end kept in touch with the conditions; nor can the abstract principle be relied upon in face of such difficulties as deciding when evil should be exposed. Effects are themselves elements in every workable moral principle. The danger is apparent of viewing moral principles and the ultimate end as eternal verities, static, and in themselves divorced from particular human needs which rank as the mere material of morality.

Such reservations illustrate the difficulty of formulating a practise so as to satisfy theory as well as of formulating theories which can work in practise.

E. L. NORTON.

WESTERN RESERVE UNIVERSITY.

L'Enseignement public en France au début du XX^e siècle. GASTON ROUVIER. Paris: Hachette et Cie. 1905. Pp. xi + 131.

The University of Upsala has been fortunate in its lecturers from abroad. To its initiative in the first instance philosophical students are indebted for the discussions crystallized in Höffding's 'Problems of Philosophy.' In a different way they have reason to be grateful for Rouvier's

monograph on the present state of education in France. Invited to give a vacation course at the Swedish University in 1903, M. Rouvier, at the close of the course, was requested to arrange for the publication of his lectures in a permanent form. The answer to the request is given in the present volume, which brings the discussion down to 1904 and reproduces the author's mature conclusions concerning his interesting theme.

The book covers a wide range of topics. All degrees in the educational system are considered, from the primary schools to the universities and the special institutions for the promotion of research. The organization of the various forms of instruction, moreover, is treated historically as well as explained and estimated in its existing phases. In each case the writer goes back to the conditions inherited by the republic from the earlier régimes, and then traces the pedagogical development through the last thirty years to the present order of affairs. The struggle for the emancipation and the secularization of education, the endeavors to liberalize and modernize methods of instruction, the efforts after unity in the system as a whole or in its constituent parts, the underlying purpose to inculcate a civic morality apart from ecclesiastical, or even philosophical, formulas—these are all discussed with an entire sympathy which leads the author into enthusiastic praises of his native land. This attitude lends his work a peculiar interest. Often M. Rouvier writes as an ardent defender of the republic rather than as a disinterested educational historian. It is the new France which he is explaining to an audience of sympathetic foreigners, and his chief concern is that they shall understand its essential moral seriousness instead of looking on the nation as given over to frivolity and play. Thus the argument brings up the great philosophical and religious questions which are agitating the minds of the French people to-day. At times these are passed over by our author with a light touch. Thinkers of other schools will find it difficult to share his confidence concerning the future of the lay society and the moral education which builds on the virtues of the citizen alone. Perhaps it should be added that like dissent will come from some who take longer views of the development of European culture. But his optimism is excellently fitted to introduce the reader to the circle of ideas on which later republican France is rearing a new order of civilization and to fix attention on the crucial experiment which it is minded to adventure. From this point of view M. Rouvier's final word has unquestionable significance: "Ainsi se vérifie que la France, dans ses écoles, tente aujourd'hui une nouvelle et essentielle expérience, et veut éprouver s'il est vraiment impossible de former la conscience du citoyen par le seul enseignement du devoir qu'a tout homme de respecter l'homme, dans sa propre personne et dans la personne d'autrui" (p. 131).

Amid these graver matters, however, the facts of French education, and even its figures, are not neglected. Nor is the practical aspect of the subject overlooked. Within the brief compass of the work the foreigner will find the information which he needs to understand in outline the system followed in the schools and universities of France, and also ~~some~~ hints to aid him, should he wish himself to study there. To this

end the concluding chapter is devoted to the provision made by the state or by private enterprise for the instruction of students from other lands.

A. C. ARMSTRONG.

WESLEYAN UNIVERSITY.

Linéaments d'une synthèse scolastique des mœurs. M. GOSSARD. *Revue de philosophie*, February, 1906.

In a fourteen-page article M. Gossard gives a summary sketch of a synthesis of moral science according to traditional scholastic principles. The scholastics realized that clear thinking conduces to right conduct, or, as Père Gratry expresses it, "Il fait chaud dans l'âme quand il fait clair dans l'esprit." Accordingly, they maintained that a system of morals must start with an analysis of fundamental concepts which are in themselves metaphysical, namely, the good, the perfect, the imperfect. An imperfect being tends naturally to become perfect, or complete; perfection, or completeness, in so far as it is the term of action or striving, is called *end*; in so far as it is a harmonious development of the being who acts or strives, it is called *good*; in so far as the being is capable of possessing the good, the good is *happiness*. The inclination of a being towards the good is *love*; the activity, or effort, of a being to attain happiness is *action*. Now, to pass from imperfection to perfection, a being must have at its disposal a supplementary energy, an energy derived from without. Therefore, the imperfect being is contingent, that is, dependent on some other being. If, then, imperfect beings pass from imperfection to perfection, or, in other words, make progress towards happiness, there must be a being essentially perfect, to whom perfection, happiness, goodness are not accidental, but essential. That being is God. God loves the world with a love that finds its motive not outside Himself, but in Himself. Man, whose good consists in knowing and loving God, may, indeed, have in mind some *immediate* motive other than God, but the act of knowing and loving God is a perfection in man only so far as it has for its *ultimate* motive the infinite perfection of God. Beings inferior to man seek their perfection without conscious motive; man, too, seeks perfection, and may even exclude God from the motives that determine his action; but then, and then only, does he really pursue happiness when he acts from the conscious motive of love of God. The world is 'merely a mechanism by which God accomplishes His divine purpose': the merit of human action consists in conscious cooperation with that purpose. He who has an intellectual grasp of the divine purpose and strives by his will to carry out the divine plan can not be unhappy: 'Diligentibus Deum omnia cooperantur in bonum.' There is, however, something absolute and imperative in the divine plan. It is not merely conditional, or hortatory. Moral obligation does not say merely, 'If you wish to further the divine purpose you must act in such and such a manner,' it says absolutely and imperatively, 'You must' (*il faut*). *Duty* is, therefore, an echo of the divine purpose in the human will, 'participatio voluntatis divinæ in rationali creatura.' The supernatural order does not change the natural man, it simply elevates him to a higher plane.

In that plane, *charity*, the love of God for His own sake, corresponds with duty in the natural order, and thus becomes the one precept in which the whole law is contained. Finally, *sanction* (reward and punishment) is, in this system, inherent and immanent. It is the logically and ethically necessary outcome of free choice of good or evil. Happiness is virtue at the highest point of achievement; unhappiness is vice at the lowest point of degradation or malice. 'Hell is nothing but the voluntary and definite rejection of God and His love, and the accompanying realization of the inherent contradiction between this rejection and the essential constitution of human nature,' in theological language, the 'pain of loss.'

The system thus summarily sketched is, indeed, the traditional Catholic system of morals, as to its content. The manner of treatment is, however, very different from that to be found, for instance, in the portion called the 'Prima Secundæ' of the 'Summa Theologica' of St. Thomas of Aquin. There is in M. Gossard's sketch less of Aristotle, and more of the saints, less of the intellectual, and more of the affective. There is, besides, an effort, which one hardly knows whether one should approve or condemn, to bring into line with purely rational principles of morality the precepts and counsels of supernatural Christian virtue and of evangelical perfection—matters which are usually relegated to moral theology and the science of the saints.

WILLIAM TURNER.

CATHOLIC UNIVERSITY OF AMERICA.

JOURNALS AND NEW BOOKS

RIVISTA FILOSOFICA. March–April, 1906. *L'Etica di Giorgio T. Ladd* (pp. 145–176): G. CALO. – An exposition, with approval, of Ladd's 'Philosophy of Conduct.' *La Psicologia matematica dell' Herbart e la psicofisica moderna* (pp. 177–208): G. CHIABRA. – Considerations suggested by Titchener's 'Manual of Laboratory Practise,' Vol. II., and by Aliotta's 'La Misura in psicologia sperimentale.' Can mental phenomena be measured? Herbert's attempt to apply mathematical formulæ to mental phenomena was a total failure chiefly because his mathematical construction was not based on experience. Empirical psychology and physiology are distinct and separate fields, and quantitative experimental psychology based on the presumption that the psychical fact is, as such, a quantity is a scientific aberration. *La Gnoseologia di Tertulliano nei suoi rapporti colla filosofia antica* (pp. 209–228): G. BONFIGLIOLI. – Tertullian's theory of knowledge is characterized chiefly by an anti-Platonic identification of knowledge and perception. Here, as elsewhere, his indebtedness to the Stoics is evident, since it is from them that he obtains the most available means of combating the Platonic tradition made use of by the Gnostics. *Meccanismo e teleologia* (pp. 229–254): A. FERRO. – Finality, like causality, is anthropomorphic in origin. The idea of cause has lost this character. The idea of final cause must be

similarly transformed before it can become a principle of scientific explanation (to be continued). *Schopenhauer e la gravitazione universale — nota critica* (pp. 255-261): O. ZANOTTI BIANCO.—Schopenhauer believed that his metaphysics of the will were confirmed by Sir John Herschel in the following passage: "All bodies with which we are acquainted, when raised into the air and quietly abandoned, descend to the earth's surface in lines perpendicular to it. They are therefore urged thereto by a force or effort, the direct and indirect result of a consciousness and a will existing somewhere, though beyond our power to trace, which force we term gravity." Schopenhauer attributed the discovery of gravity to Hooke rather than to Newton. *Rassegna Bibliografica. Notizie e Pubblicazioni. Sommari delle Riviste Straniere.*

Harvard Psychological Studies. Vol. II. Boston and New York: Houghton, Mifflin and Co. 1906. Pp. 644. \$4 net.

Münsterberg, Hugo. *Science and Idealism.* Boston and New York: Houghton, Mifflin and Co. 1906. Pp. vi + 71. 85 cents net.

Sewall, Frank. *Reason in Belief, or Faith for an Age of Science.* London: Elliot Stock. 1906. Pp. ix + 208. 5s.

Shearman, A. T. *The Development of Symbolic Logic.* A critical-historical study of the logical calculus. London: Williams and Norgate. 1906. Pp. xi + 242. 5s. net.

Stein, Ludwig. *Die Anfänge der menschlichen Kultur.* Leipzig: B. G. Teubner. 1906. Pp. 146.

Virgilj, Giovanni Amadori. *Il Sentimento imperialisto.* A psychosociological study, with preface by Errico de Marinis. Palermo: Remo Sandron. 1906. Pp. xxii + 340. 3.50 l.

Walthoffen, Walter v. *Die Menschheit; deren Abstammung, natürliche und kulturelle Entwicklung, Aufgabe und Bestimmung.* Vienna and Leipzig: Wilhelm Braunmüller. 1906. Pp. xi + 283.

Warrain, F. *La synthèse concrète.* Paris: Bodin. 1906. Pp. viii + 184.

Woods, Frederick Adams. *Mental and Moral Heredity in Royalty.* New York: Henry Holt and Co. 1906. Pp. viii + 312.

NOTES AND NEWS

HENRY HOLT AND COMPANY announce the publication of 'Analysis of Racial Descent in Animals,' by Professor T. H. Montgomery. The *Nation*, of June 28, comments upon the book as follows: "The fires of scientific controversy are still burning hotly about the facts and theories of heredity and evolution; and, as usually happens in such cases, a large part of the material of the controversy has already been wholly consumed by the conflagration. The residue which has survived the ordeal necessarily rests upon so intensely technical a foundation that it would seem

almost impossible to formulate a statement of the general principles of this department of biology and the basal facts upon which these principles rest, that would be of value to any but the thoroughly informed specialist. The preparation of a manual of theoretical biology for the general scientific public is really a far more difficult enterprise than in the days of Herbert Spencer's 'Principles of Biology,' when protoplasm could be regarded as a simple, homogeneous fluid. Professor Montgomery, in his 'Analysis of Racial Descent in Animals,' has attained a large measure of success in presenting the general problems of evolution as they appear to-day, with the necessary technicalities succinctly and, on the whole, clearly presented. The relations of animals to their environment, their differentiation, modes of reproduction and variation, the physical basis of heredity, the transmutation of species, and phylogeny are broadly treated, and in some cases, as in the discussion of the old problem of the inheritance of acquired characters, the essential points of both sides of the controversy are brought into harmonious adjustment."

A GEORGE COMBE lectureship in general and experimental psychology has been established at the University of Edinburgh. The Combe trustees have contributed £300 towards the equipment of a laboratory. George Combe, known as the author of 'The Constitution of Man,' was the chief representative of phrenology in Great Britain in the first half of last century. He left funds, which have considerably increased since his death, for promoting the knowledge of man's mental and organic constitution in relation to the external universe and its laws, and for diffusing that knowledge as widely as possible. Besides experimental teaching and research, it is expected that the lectureship will be largely utilized in connection with the training of teachers. An appointment will be made in time for work to begin next session.

PROFESSOR ELMER BROWN, head of the department of education at the University of California, has been appointed United States Commissioner of Education, to succeed Dr. William T. Harris, who retires as the first beneficiary under the Carnegie fund.

PROFESSOR FRANZ CUMONT, famous as an authority on the religion of Mithra, delivered, during the past term, at the invitation of Manchester College, Oxford, three Hibbert lectures on the influence of Oriental cults on Roman religion.

PROFESSOR DIELS, of the University of Berlin, is cataloguing the manuscripts of the physicians of antiquity. He has recently received a grant of three thousand marks from the Prussian Akademie der Wissenschaften.

EDWIN DILLER STARBUCK, Ph.D., professor of education in Earlham College, Richmond, Indiana, has been elected to the professorship of philosophy in the State University of Iowa.

HARVARD UNIVERSITY has conferred its doctorate of laws on Professor G. H. Palmer, professor of ethics at the university.

DR. E. H. HOLLANDS, of Cornell University, has been appointed instructor in philosophy at Princeton University.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

THE GROUP CONCEPT IN THE SERVICE OF PHILOSOPHY

THE best service that can be rendered to philosophy by any science is the creation of concepts which can be made tools for the general study of experience. To take over bodily into philosophy any scientific method is a policy whose mistake is attested by failures frequent and glorious enough; but for conceptual engines we have depended, and must depend, upon what the sciences are producing. Of these engines few have been devised of such scope and power as the concept 'group' which the mathematicians have been forging out for a hundred and fifty years.¹ This concept is an achievement of what we may call the morphology of mathematics; and by due refinement, discarding what is specifically mathematical, it can be set free for a career not less extensive than the entire morphology of experience. To effect this release, we have first of all to study the 'group' idea as it exists in mathematics, in an attempt to exhibit its logical essence, an attempt to which this paper is devoted. A succeeding paper will outline the field of its application.

The idea 'group' fills in extraordinary measure three typical and apparently divergent ambitions of the mathematical concept-builder: it is at once highly specialized, highly significant and highly simple. It is highly specialized, that is, limited; it is removed by a great depth of determination from the empty idea of a class of objects in general. We know, on general principles, that the amount of meaning carried by any idea, and extractable from it, bears some relation to its restrictedness; the properties necessary in order that a class of objects should qualify as a group are striking and—if we may speak of ideas thus statistically—rare. But a concept may be ideally restricted and yet empirically hospitable; it is so if what it excludes is *excluded by reality also*. If a concept thus adds to its specialization significance, it is what we mean in mathematics, and elsewhere, by a *powerful* concept. The group concept is powerful in this

¹ Bibliography in 'Transactions of American Mathematical Society,' April, 1906; 'Note on Definitions of Abstract Groups, etc.,' by E. V. Huntington.

sense: it concentrates a large range of the actual business of mathematics into itself; and demonstrations made upon it have that quality which is called in the weird language of mathematical esthetics, 'elegance.' But thirdly, it is highly simple; and here we come upon a notion much used and little understood—perhaps because it itself is simple—an ideal which expresses itself usually in the demand that the concept shall be definable in few and obvious terms. In brief, the mathematician, in the union of these antagonistic motives, is trying to get 'near to nature'; and the degree to which he has succeeded sufficiently explains the importance of his product to the morphology of experience. Let me state at once, in rough, the salient character of a group, as a basis from which to reach by stages a precise definition.

A group is a class of objects so related to each other that a rule may be stated whereby, when any two members of the class are given, a third member is pointed out, or determined. Whole numbers, for example, are so related to each other that, by a rule of addition, any two of them determine a third. If the class be rational numbers, the rule of multiplication has the required property. For forces, angles, etc., similar rules may be alleged; the constitution of these worlds of objects permits any two of the given class thus to govern, or infallibly indicate, a third.

From the logical point of view, this definition has a very striking peculiarity. A class of objects is usually defined by naming the characters of the typical member of the class; the relations which members of the class bear to each other are not mentioned. The group definition, on the contrary, says nothing whatever about the character of the individual members of the group, and is concerned solely with the relations among them. It is the business of ordinary class definition to concentrate upon, and confine to, the individual all the distinguishing criteria of a class, and to consider peculiar relationships as resultant from this character. The group definition abandons this line of attack upon the object of knowledge: it begins with the relation.

Now the 'rule' which plays so conspicuous a part in the definition is nothing else than this relation transformed and fluent—thought of as *active*. The characteristic relationship of group members is triadic, and the rule exhibits this relationship as clothing itself with its full complement of terms; two terms of a triad being filled with two given members of the class, the relation, under the guise of a process, is conceived to discover its missing term. There is no logical necessity, so far as definition is concerned, for thus

mobilizing the group relation and turning it into a rule; this is a mere accident of the mathematical exploitation of the group structure for purposes of calculation. The essential point is, that if the whole numbers, for instance, constitute a group, it is not on their own merits, as members of the class whole numbers, but by virtue primarily of a certain triadic relation into which the various whole numbers can be thrown: that, namely, of a , b and c , when a plus b is said to *equal* c .

The fact that the brunt of definition of a group falls upon the group relation or rule does not mean that the individual is lost from sight. Just as the description of the individual, in ordinary class definition, limits the variety of possible relationships within the class; so the specification of relationship limits the range of the type of individual that can stand therein. It is true that of all conceivable classes of objects having a plurality of members, there is perhaps none for which some ingenious rule might not be devised to comply with the rough definition we have given. For so disorderly a class as, let us say, all the ships on the Atlantic, there might conceivably be a convention to the effect that any two ships shall indicate that other ship whose latitude at any time is most nearly their mean latitude. But in proportion as the nature of the rule is brought to precise expression we shall find the variety of individual types that can support that rule rapidly lessened. By excluding the artificial, ingenious and conventional types of rule the mathematician excludes at the same time the more contingent, accidental and limited sorts of classes; there is a genuine *rapprochement* between rule and type of object, until the rule becomes, so to speak, the *natural law* of the group—as addition is, in a genetic sense, the natural law of whole numbers. It is of extreme interest to observe how the mathematician has made precise the statement of the properties of the kind of rule thus vaguely described.

Let us first require of the rule, simply, that it point out always *one and only one* third member, any two being given. The disorderly class above suggested is immediately excluded, and with it a vast army. For whatever the character by which the rule identifies the required object, it must be a character which one of the class *must* have, and no two of the class *can* have. Very few classes can boast, on the one hand, such intrinsic individuation and, on the other, such complete representation of all points in that individual order which the rule might possibly call for. Most classes of objects, in their principle of individuation, are parasitic, making use of the already individual points of some field, such as space, to identify their members: none of these can yield a group rule.

Consider, secondly, an important series of classes—the species and genera of organisms in their genetic relations. Imagine the species buffalo, ideally complete in infinite past time. The rule that any two buffaloes indicate their nearest common male ancestor complies with the requirements so far made. The ancestral series is necessarily without gap, and the individuation is intrinsic to the species. But from the point of view of the group, such a rule has a serious defect: there is a large segment of the class which the rule can never reach in its determinations; the female ancestors are never identified. It is required of the group rule that it be possible to determine by its use *all* members of the class; and this requires of the class that its intrinsic order of individuation involve all its members homogeneously. Let us now state, in its own brief terms, a technical definition of a group. Let there be a well-defined² class, or assemblage, of objects, K . Then K will be a group with reference to any statable rule which complies with the following requirements:

I. Given any two members, or elements, a and b , of K , there is determined by the rule a unique object, x , which is also an element of K .

II. Every element of K is determined by the rule from two other objects, either one of which being chosen at will from K , the other is thereby fixed, and is an element of K .³

III. Any three elements of the assemblage being given, if the first is paired with the second according to the rule, and their result with the third, the object thus determined is the same object as is found by pairing the second with the third, and then the first with their result. In other words, the law of association holds.⁴

² Defined, that is, by a condition which every object in the universe either does or does not satisfy, so that there is no ambiguous or doubtful margin of objects.

³ There is no whole number, for example, which is not a sum of two others, properly chosen; any (other) whole number may be taken as one of a pair of addends to make that sum, in which case the second member of the pair is also a whole number, uniquely fixed.

⁴ In terms of the relationship R , these postulates become:

I. Given members a and b , there is a unique object, x , such that $R(a, b, x)$; and x is a member of K .

II. Given members, a and b , there is a unique object, y , such that $R(a, y, b)$; and a unique object, z , such that $R(z, a, b)$; and y and z are members of K .

These two can obviously be put into one, to the effect that:

Given members, a and b , there are unique objects, x, y, z , such that $R(a, b, x)$, $R(a, y, b)$, $R(z, a, b)$; and x, y and z are members of K .

III. If we have $R((a, b), c, v)$ and also $R(a, (b, c), u)$, then v and u are identical (the convention (a, b) meaning 'the element determined by a and b ').

In this definition, postulates I. and II. clearly supplement one another. Distinguishing in the triad two functions, that of the determining pair and that of the determined element, postulate I. demands that for every pair there be a determined element; while postulate II. demands that for every element there be a determining pair, or series of determining pairs. Postulates I. and II. do not of themselves, however, instruct us which element in any given triad is to be regarded as the determined element, and which pair the determining pair. Postulate II. intimates that no matter which of the three couples in any triad are given, the remaining element is determined; so that wherever it is possible to state one rule, it is possible to state three rules, which equally comply with the conditions. If a and b determine x , then a and x will determine b by another rule, and b and x will determine a by still another. If whole numbers are a group under addition, they will also be a group under substraction,⁵ so far as these two postulates are concerned. Postulates I. and II. are, in fact, equivalent to the following summary definition: A group is an assemblage whose elements sustain triadic relationships of the form R ; R being such that two elements are *necessary*, and any two are *sufficient*, in any two terms of the triad, to fix uniquely the third term of the triad.

But the three rules which govern any triad are, in an important sense, phases of one rule. Addition and subtraction, for instance, belong to each other as addition and multiplication do not. And

The language of R has the advantages and disadvantages of symmetry. It must not be forgotten that the original trend of determination is from a and b to x , in $R(a, b, x)$, and not to y and z in $R(a, y, b)$ and $R(x, a, b)$; only the first defines the specific rule. There is no postulate to the effect that y and z are discoverable; and if they are so discoverable, the rules by which they are found are genetically 'inverse' to the rule of $R(a, b, x)$. The language of R further obscures certain important ordinal distinctions between postulates I. and II.; distinctions of the sort brought out in the paper of E. V. Huntington (superseded by his own later work, but in this respect not improved on) in *Bulletin of the American Mathematical Society*, 2d Series, April, 1902. It is II. that gives the concept its mathematical stamp; postulate I. is presupposed in II. and is on a different logical plane. The relation between them might be expressed by calling II. the postulate of determined determinants. The language of R is appropriate for expressing results, and for exhibiting the philosophical character of the finished concept, but not for showing the genetic meaning of the group.

⁵The circumstance that the two kinds of substraction are identical is a concomitant of the circumstance that for addition the order of the two addends is indifferent—if $R(a, b, x)$, then also $R(b, a, x)$; the commutative law holds; the group is a so-called Abelian group. In general, the functions of a and b in the triad are different, so that their order can not be inverted without altering the object determined, in which case the three rules are all different.

there are reasons for regarding *one* of the three rules of a triad as the group rule, *par excellence*, from which the other two are derivative; one as direct, the others as 'inverse.' These reasons, whatever they may be, are embodied in the third postulate, which addition, multiplication, etc., satisfy, whereas subtraction and division do not.

This third postulate is something of a mystery. It offers no illuminating insight into its essential motives. It seems mechanical, extraneous, and a disturbance to the neat internal harmony of the others. It has often appealed to the mathematician as a conclusion, or theorem, rather than as a first premise. But if it is deducible from something more primary, that something has not yet been formulated. I surmise that this postulate of association is a deduction; but that its premises lie in a region outside mathematics proper, so that the mathematician will always have to content himself with the cumbrous law as a first principle. In what follows I shall make an attempt to find its sources. I turn to an analysis of the concept now definitely before us.⁶

The business of mathematics is to make identity do work. The difference between an equation which has a root and an identical equation, so-called, which is analytic, barren and stationary, illustrates the motive in question. If we could discover within these three postulates the essential unity of the group concept, and at the same time the secret of its power, we should find it in some such working identity, some asserted or demanded agreement between things conceptually independent. There is, in fact, a fundamental duality in the group concept, a duality which each one of the postulates in its own way partially expounds and synthesizes.

We have said that the group definition addresses itself to the relation between objects rather than to the individual object. The ideal of this relational type of definition is to ignore the individual, and to describe its class as 'the totality of all possible terms of the

⁶ Thesis: The primordial data of mathematics must always be pragmatically defined, in the sense that they express *particular results* of the character of the concept, and not the character itself. They follow precisely the form of the old Latin *ut* clauses; the object to be defined is 'of such a nature that as a result' m equals n . Hence it is that definition takes the form of a set of postulates. And hence it is that no set of postulates can be proven 'sufficient' for an assemblage of real objects (*e. g.*, for absolute continuous magnitude as an object of experience), though sufficient connection may very well be made with a type of theory *applicable* to continua, when that theory already exists as a body of fundamental theorems. Weber's distinction here is fundamental. See 'Lehrbuch der Algebra,' II., S. 6, 'Die Eigenschaften der Gruppen. u. s. w.'

relation *R*.' But the group definition does not attain this ideal detachment. There is no such thing, for example, as the totality of all possible terms that can stand in additive relations. Whole numbers, real numbers, numbers and continua of very various kinds, alike constitute groups under addition. There is no unmistakable implication and marriage of rule and class.⁷ Hence it is that two data are necessary to designate any actual group. A group is not fully described as 'the group of multiplications,' but as 'the group of multiplications *among* rational numbers,' or, as 'the group of rational numbers *with reference to* multiplication.' A group is, in reality, a double genus: it undertakes to mean at the same moment objects of two distinct orders,—things as well as relations, a class of particulars as well as a kind of class. The working power of our concept is measured by the degree of independence between these two sets of objects which it brings together, and by the degree of unity which it effects. The fundamental deed of the group concept may be thus stated: It defines a correspondence between the relatively independent domains of a dyadic class relation and a triadic relation of the form *R*, above described.

The most obvious phase of the correspondence in question is *coincidence in range*. In so far as connotation is considered to determine range, or denotation, the ordinary class relation is virtually made an active rule—is mobilized in a manner analogous to the flux of the group relation. But in contrast with the group process, it reaches wholeness at a bound. It may indeed be conceived to operate serially, in a chain of *recognitions*—in which case it may develop in the form of a 'Kette,' as in the number series; but this chain is, at the statement of the definition, ideally complete; the membership and outline of the class are fixed. If we presuppose that the class rule has completed its work, and the assemblage *K* is completely made up; and if we then allow the group rule in its triple character to run at large within *K*, using every possible pair of elements, in every possible way, to determine new terms: we already know that in the totality of these new terms (1) nothing is added to the assemblage, and (2) nothing of the assemblage is left out.⁸ The domain

⁷ There is, however, a peculiar and obvious appropriateness between certain rules and certain classes. Addition is more at home among whole numbers than anywhere else. The group concept will not be finally clear until the distinction is made between the original and the derived classes for any rule, and the perfect mutuality of rule and object has been established, for these originals.

⁸ By postulates I. and II. the active group relation, conceived as a triple rule determines always class members, and nothing but class members. Thus, a process like multiplication-division, which working at large among whole numbers deposits its fruit sometimes within the class and sometimes without,

of the group rule thus obviously coincides with the domain of the class rule. But the significance of any agreement is in proportion to the degree of independence between the agreeing processes; and the group rule has a greater independence of K than our present presupposition shows. Complete independence is, of course, impossible; for the group process does not work in the void, as the class process does—it requires a datum of two objects in order to make a beginning; but for certain fundamental groups a *base* of two elements can be so chosen that the group process, by adding its successive results to the base, will run through the whole assemblage, determining every member without omission. And for any group whatever there is a *class* of objects, included within the group, from which as a base the group process will thus generate, or rather, regenerate, the whole assemblage. To measure the full worth of the demanded coincidence of range of these two processes we should have to determine this base. For our purpose it will be enough if we locate it within the group by establishing one necessary element thereof.

There appears to be nothing in the definition of the group process itself which would enable us to single out any region of an assemblage in preference to another as a base. The group idea is emancipated from the peculiarities of the objects both by its primary interest in their relations and by its ideal generality. The group process is impartial in its concern with the several elements of the assemblage; the distribution of the triads into which the assemblage crystallizes under its group rule is perfectly homogeneous. Considering the totality of these triads, it appears from postulates I. and II. that every element is found *with equal frequency* in each of the three positions in the triad, determining and determined; and that all elements occur *with the same frequency*. According to this ideal impartiality, in thinking of the pairs into which any given element can enter, the pair *with itself* is not omitted. For every element m there must be elements x, y, z , such that $R(m, m, x)$, $R(m, y, m)$, $R(z, m, m)$.

But in the moment of attaining this perfection of indifference to the elements the generality of the process seems to break off its own point. By postulate III. it can be shown that y and z in $R(m, y, m)$ and $R(z, m, m)$ are always identical. Also that in $R(m, y, m)$, $R(n, y', n)$, $R(p, y'', p)$, etc., throughout the assemblage, y, y', y'' , etc., are all identical, and so also identical with the corresponding z, z', z'' . This identical element, which thus con-

can not be a group rule for whole numbers. By Postulate II., every member of the class lies within the sphere of determination.

stantly reappears in all cases of self-determination, may well receive a special symbol, i . For it, $R(i, i, i)$ holds; and it is the only element that can occupy all three terms of R at once. Such an element is the *zero* of addition, and the *unity* of multiplication. All the exceptionality that was set aside by allowing elements to pair with themselves, is concentrated upon this salient member. The significance of the postulate of association we may presume is bound up with its ability to precipitate the element i from the homogeneous body of the assemblage. We have now to come into closer quarters with that postulate.

It is the work of the group process to transmute determinations of two elements into determinations of one. This requires that the determining elements be themselves determinate. Now there are two ways in which a pair of objects may be determinate: either with reference to one another; or, in relative independence of one another, with reference to a common third. If every pair of elements of an assemblage were determinate in the second manner, and if the common third of all pairs were the same object, we should have reason to characterize their determinations as *absolute*, in contrast with the merely relative determinations of the former type—a kind of absolute which, as usual, means simply, relative to a third. From the point of view of the class relation merely, the adoption of any point of reference for 'absolute' values is purely *arbitrary*. The points of a line are in order, the relations of positions and figures in space and of discrete objects submit to mathematical reasoning, without the assumption of any *origin*. But

(α) No *associative* process can be defined without reference of the determining and determined objects to an origin (taking this term in as wide a sense as is necessary to cover the variety of fundamental groups).

(β) No associative process can be defined wherein the relation of the determining objects to each other is a constituent function.⁹ On the other hand,

(γ) That any rule be associative, it is sufficient that in the determinations of x , in $R(a, b, x)$, the determinations of a and b , with reference to some origin of absolute values, shall exist unaltered.¹⁰

⁹ No rules, that is, can be associative in which x , in $R(a, b, x)$, is a function of $b:a$. K being all numbers, the rules that $x = b - a$; $x - b = b - a$; $x/b = b/a$; $x = (b - a)(b + a)$; etc.; or, K being the points in space, the rule that x be the middle point between b and a , etc.—are for this reason not associative.

¹⁰ As most obviously in addition of numbers; also in addition of displacements referred to Cartesian coordinates, etc. 'Unaltered' means to exclude those obscurations of the individualities of a and b in x which arise (1) from

It appears, then, that what the third postulate essentially demands of the primary group rule is: That in the element which results from combining any two elements, the individuating marks of these two elements shall neither be cancelled by an eliminative comparison with each other nor obscured by intrusion of alien parameters; that a and b shall enter into x only as objects defined in independence of each other by reference to an arbitrary origin of absolute values, which we may represent by the symbol o .

Herein is implied that as members of the group, the elements have no relations to each other which are not themselves elements. Points, related by distances, can not constitute a group; but distances, related by distances, may do so. Now any element k may be the medium of relation for many pairs, $R(n, k, p)$, $R(p, k, r)$, $R(r, k, t)$, etc., but in the pair with itself, $R(i, k, k)$, which is, in a special sense, a declaration of its own identity, or absolute value, it is clear that the absolute value of i is no other than o , which thus appears a member of the assemblage.¹¹

It may now readily be shown that the other elements are disposed symmetrically about o , in such wise that for every element a there is an element a' , such that $R(a, a', o)$ and also $R(a', a, o)$. The center of symmetry in the assemblage thus corresponds to the center of self-determinations in the group. The element i is a sort of pivot upon which turns the correspondence of the two domains we

relativity, and (2) from intrusion of alien variables or alien rules. Thus, $x = (a + b + 2)$, or $x = 2ab$, may be associative; but $x = 2(a + b)$, and $x = ab + 2$ can not be; neither, $x = a + b + b$, nor $x = ab^2$.

I am not yet able to state a necessary and sufficient condition for an associative rule in mathematical form. Such formulation might be attempted on the following lines. Consider $R((a, b), c, v)$ and $R(a, (b, c), u)$. To obtain v , in the first complex triad, a and b have been subjected twice to the group operation—which let us call f —while c has been subjected to it but once: a fact which might be symbolized by $v = ff(a), ff(b), f(c)$. In the second complex triad, $u = f(a), ff(b), ff(c)$. The condition that u shall be always identical to v is that ff shall be neither more nor less than f , in regard to the specifications by which a and b are individuated.

¹¹ As such member, it has, like k , a triad which in a special sense defines it, $R(o, o, o)$; and enters into an indefinite number of triads as a merely relative 'absolute'— $R(m, o, m)$, $R(n, o, n)$, etc. Thus, with the establishment of the one arbitrary origin, are established as many secondary origins as there are elements; potential origins, if you will, which by their varying departures from the primary origin are analogous to the 'potential' points in a field of force. This transferableness of origin has sometimes been taken as the essential meaning of the associative law, addition, for instance, being explained as follows: in $R(a, b, x)$, b is counted from the transferred origin defined in $R(a, o, a)$. Such explanations are accurate but derivative, inasmuch as the origin o is logically distinct from the element o , for which the symbol i is proper.

are comparing. It is the navel of the group; and the function of the third postulate is to insist upon this connection as the group process approximates absolute freedom and generality, and the group relation approximates perfect independence of the individual,—to insist upon this connection with an arbitrary origin, without which the required *base* for determining the group domain through the group process alone can not be defined.

We describe a group, then, in sum, as the domain of a threefold process, in which two terms of a triad constitute data necessary and sufficient to determine the third; the domain being coincident with the domain of a given dyadic relation defining an assemblage of objects.

The writer is conscious that these formulations are descriptive rather than mathematical. It has been his aim to express the spirit and *Motivierung* of the group concept, within the limits of accuracy, rather than to expound its machinery; and the resulting analysis, which perforce leaves many questions unanswered, may be sufficient to show in what direction we must look for the epistemological service of the group concept.

WILLIAM ERNEST HOCKING.

HARVARD UNIVERSITY.

LINGUISTIC STANDARDS

THE teaching of English in our schools and colleges has concerned itself very little with the theory of linguistic usage, the disadvantages of which omission are apparent in the light of recent psychological advances.

That a historical linguistic standard is necessary is everywhere admitted; use is the law of language. But to the inevitable query 'whose use?' the exponents of the present methods of teaching English give a far from satisfactory reply, not the more so for its practical unanimity. The present historical standard is decidedly conservative in character, exercising the greatest vigilance against all encroachment upon the recognized linguistic material. The author of the usual 'Principles of Rhetoric' resists the technical terminology with the same vigor with which he opposes the dialect of the submerged tenth. But the former arises out of growing needs of the language, while the latter is composed of figurative terms for which there are already proper equivalents. There are many cases in which the condemned technical avoids ambiguities in the sanctioned popular parlance. Under the historical standard in its present form

illogical and confusing usages are admitted and preserved. The shall-will construction could never maintain itself under a standard paying any heed to linguistic psychology.

This standard, as enunciated by the intellectual descendants of Schottelius, Gottsched and Adelung, provides that the arbiter of linguistic usage shall be the usage of authors of established literary reputation. The standard is, therefore, a purely literary one. What established reputation means is generally not defined, and it must be admitted that its criteria are usually subjective enough; but it is the first axiom of literary criticism that no reputation for literary excellence can be established until at least a generation after the death of its possessor. Such standards as this can not, therefore, well be younger than twenty-five years, and there has been no time when the language of twenty-five years ago was less fitted for later employment than the present. Good use should by this standard keep by so much in the rear of the actual needs of the language, and that it does so is shown by the frequent necessity of the exercise of the conservatism characteristic of the exponents of this standard. From this interpretation of the historical standard a reactionary attitude is logically inseparable.

Whatever may be the, as yet, very imperfectly defined criteria of the right to become an arbiter of linguistic usage, the exercise of correct linguistic usage can not itself be one of them. Nothing can be simultaneously a cause and effect of the same thing. A literary product, being good use because it is great, can not be great because it is good use. This forces all advocates of historical standards into the position that every linguistic monument possessing certain requisite criteria of greatness is *ipso facto* correct linguistic usage. This position is defensible provided these criteria are properly selected. It is wholly indefensible through such criteria as those exhibited by the group from which the models of the present historical standard are selected.

The most universal and the most essential of the characteristics of recognized literary greatness is an appeal to subjectivities,—to the emotions. The influence upon language of the scholar, scientist and philosopher is small indeed compared to that of the essayist, novelist or poet. Is not the influence upon the present standard of linguistic usage of an Addison, a Scott or a Wordsworth immeasurable compared to that of a Basil Gildersleeve, a Simon Newcomb or a William James? Yet the former employers of language, whose appeal is primarily emotional, have surely far less claim to the arbitrament of linguistic usage than the latter, who employ language in its sole function—the objective—which is capable of regulation. The value

of a scholastic or scientific work may from this very fact be more rapidly, not to say more accurately, estimated, and thus the first objection to the present standard would also be satisfied.

Models of linguistic usage, as determinative of that body of linguistic elements to be considered good use, are, therefore, rather to be sought among works whose criteria of value are more objective in character, for such works are in closer touch with the actual needs of the language.

However elaborately accounted for, the statements of the interrelationships of this material as given in the usual 'Principles of Rhetoric' are dependent upon a single factor—the author's introspection. The manner in which these principles are imparted to and accepted by the college and even the university student of English constitutes one of the most melancholy pages in the history of the phenomena of suggestion. Especially is this true when it is reflected that there is hardly one of these topics upon which we are asked to accept as final their subjective judgments that is not capable of objective investigation. The physical sciences were rescued from this sort of advancement by Galileo at the Leaning Tower; elsewhere the emancipation has only just begun, and especially is this true of the science of language.

Objective determinations regarding the choice of words are best made through the medium of the omitted-word test. In its usual form the subject supplies occasional blanks in otherwise connected composition; this constitutes one of the most practicable measures of general intelligence that we have. As an objective determination of the 'right word' the subject should arrange a group of synonyms in order of their supposed effectiveness in the given context. Relative values may then be calculated by relative position.

Upon this principle the writer has applied relative position in determining the relative force of synonymous groups. These groups, 11 in number, consisting, in seven cases of 5, in two of 3, in one of 7, and in one of 9 synonyms each, were presented to a class of 32 English graduate students in Columbia University, out of whom 19 returned answers, one confessing inability to make the arrangements. The series were presented in random order, and the subjects requested to arrange them in order of force. No definition of force was given, as it was desired also to determine the amount of unanimity in its conception. The objection that this group of subjects might be influenced by previously suggested definitions of force must be answered with the fact that the arrangements did not consistently follow any of the usually not overclear definitions that it has been attempted to lay down. The judgments are as follows:

Order	Positions	P. E. (18 Judgments)	Order	Positions	P. E. (18 Judgments)
Glorious,	1.7	.15	Eternal,	1.3	.1
Illustrious,	2.7	.18	Immortal,	2.3	.1
Exalted,	3.1	.2	Undying,	3.3	.16
Noble,	3.2	.29	Imperishable,	3.8	.17
Renowned,	4.3	.14	Ever-living,	4.1	.2
Radiant,	1.9	.14	Fleeting,	1.9	.2
Resplendent,	2.4	.22	Momentary,	3.1	.22
Brilliant,	2.6	.2	Evanescent,	3.3	.31
Lustrous,	3.8	.14	Ephemeral,	3.4	.26
Shining,	4.3	.2	Transient,	3.4	.18
Dark,	1.4	.12	Desolation,	1.8	.19
Obscure,	3.1	.22	Ruin,	2.5	.23
Murky,	3.3	.24	Devastation,	3.1	.18
Dim,	3.4	.24	Waste,	3.5	.26
Dusky,	3.8	.14	Havoc,	4.3	.18
Calm,	2.3	.18	Ocean,	1.6	.11
Peace,	2.5	.27	Sea,	1.8	.12
Silence,	2.9	.24	Waters,	2.6	.13
Stillness,	3.3	.22	Infinite,	1.3	.09
Quiet,	4	.16	Boundless,	1.8	.1
			Unlimited,	2.9	.04
Devil,	1.8	.25	Fearless,	2.7	.29
Satan,	2.4	.17	Heroic,	2.8	.31
Lucifer,	4.5	.35	Brave,	3.4	.33
Prince of Dark-			Courageous,	3.6	.18
ness,	4.8	.33	Valiant,	3.7	.27
Arch-enemy,	5.5	.29	Gallant,	5.7	.27
Belial,	5.6	.27	Doughty,	6.1	.17
Father of Lies,	6.3	.41			
Apollyon,	6.8	.37			
Old Serpent,	7.2	.33			

P.E. = .205 A.D.

The judgments have, on the whole, a greater validity than the writer had anticipated. Out of the 28 judgments in the five-word series, in 10 cases a preceding word plus its probable error occupies a lower position than the immediately succeeding minus its probable error. In the majority of cases the positions may be accepted with a very fair degree of certainty. The probable error does not tend to increase materially as the lower positions are reached, save in the two last series, where the complete supply of synonyms was given. Elsewhere the weakest word has frequently a smaller probable error than any in the series, although it was intended to select only the stronger of a group of synonyms for judgment.

Various interesting groupings occur in the judgments, of which only a few instances may be cited here. Thus, in the *glorious* series there are two distinct species of grades, one giving *glorious* first place, the other *noble*. But those who give *noble* first place almost always give *glorious* second, while those giving *glorious* first place give *noble* fourth or fifth. Hence the low position and large probable error of *noble* in the result, which is really a mixture of species. In like manner those who grade *radiant* high tend to give *resplendent* a higher grade than those who grade *brilliant* high. There is a small number of cases in which *resplendent* is given first place, and in these judgments *lustrous* receives a disproportionately high grade. Perhaps the most interesting single series is the *fearless-heroic*. There are here to be recognized groups grading as first either *heroic*, or *fearless*, or *brave*. *Brave* gets its lowest grades from the *heroic* group, and *heroic* gets its lowest grades from the *brave* group. The *fearless* group gives *heroic* and *brave* almost equal grades. But there is another equally distinct mixture of species apparently independent of the word given first place. About three fifths of the subjects grade *valiant* either second or third, the remainder grade it either fifth or sixth. The group giving *valiant* a low grade tends to give *fearless* a higher grade than *heroic*, and the group giving *valiant* a high grade gives *heroic* a higher grade than *fearless*. These few facts may give an idea of the intricacy of the whole problem.

No general deductions are to be drawn from these results, and only by a very large series of observations could it be determined whether the experimental method justifies the formulation of any general principles, or whether their data are merely to be accepted as facts, not truths. But in proportion as the facts are investigated, will the decrees of introspection lose their *ex cathedra* significance.

COLUMBIA UNIVERSITY.

FREDERIC LYMAN WELLS.

SNAP SHOT OF AN ASSOCIATION SERIES

THE current stock of stories illustrating association series is getting a little shop-worn, and it behooves psychologists to look over a few samples preparatory to getting in some fresh goods. The following sample is an honest piece of photographing, and although it lacks the color and warmth and fine shades of an actual experience (except to the persons who had the experience), it is nevertheless as true to life as such snap shots can be. Perhaps this account may stimulate some psychologist to record and recount more of the 'ordi-

nary' experiences of every-day life. The story follows—at this writing it is exactly ten minutes old!

I

Mrs. and Mr. X. are sitting by the fire on a cold winter's night. It is about an hour after supper and the three strenuous youngsters have been bundled off to bed. The seven-months-old baby still holds the fort, but is making no disturbance other than trying her involuntary vocabulary with evident enjoyment. Mr. X. has been smoking, but has just discovered that the pipe he has been using ought by rights to be retired—speedily. This belief of his is shared by the surviving members of the family. He facetiously remarks on the muscularity of his aged instrument of solace. Whereupon Mrs. X. remarks mechanically (humoring a fool according to his folly), "Ancient of days.³" She is a reverent churchwoman and quite accustomed to the Bible phrase and the hymn beginning with these words. Nor does she reflect upon the seeming irreverence of using the words in such a connection. For forthwith she forgets all about the offending pipe and begins to sing the noble hymn 'Ancient of Days,' following Jeffery's familiar tune of the same name. Now this reaction on her part was to be expected, inasmuch as she is a member of the choir and her husband a 'sort' of member. So the ruminative song-attitude is 'on.' By the time the hymn is ended the baby furnishes an apparent diversion. She 'says' something that sounds like 'wicker.' Now this word fires off a family joke; for the three-year-old sister of the baby is in the habit of characterizing her infant sister's reprehensible habit of 'licking' the sheet as the doings of a 'wicker' (licker). Straightway Mrs. X. takes up her parable, following 'wicker' as a cue, and proceeds to sing—for the song is still the thing—"Sweet Dreamland Faces"! Not, as one might suppose, for the benevolent purpose of suggesting slumber to the 'wicker,' but because the words 'the *wicked* cease from troubling' occur in the last stanza of the aforesaid song. Her husband dreamily joins in and at the end somewhat jauntily chants as final recitative the barbarous syllables, 'tum-tum-tum.' At this juncture Mr. X. should have allowed his companion to have the next inning, but his mood of rhythm lures him on, and the frog's supposed advice to the befuddled carouser comes to mind: the inebriate is about to cross a swampy place and he thinks he hears the frogs say, "Better-go-round." Whereupon Mr. X.'s voice repeats his mind's remark and he says lazily, "Better-go-round." Of course Mrs. X.'s mind is not going to be deprived of its due, so she speaks out the mocking remarks of

another group of frogs, who tempt the hero of the story by their alluring suggestion of 'jug-o'-rum.' This cadence recalls to Mr. X.'s thought the guinea-hen's cry which he had heard about two hours before—not the commonplace 'pot-rack' of popular report, but a sinister 'Jugg-er-naut'! And why this heretical word? Because about a year before, while Mrs. X. lay near death's door on account of a very serious injury seemingly due to a trivial cause, Mr. X. heard the hysterical bird of Africa wail out the words of his own fateful mood. Ever since he has heard no other sound from the bird but—'Juggernaut.' And finally the little drama of association comes to a close, for Mrs. X. begins to imitate, for the baby's benefit, the soprano chuckle of the domestic turkey-hen! Whereupon Mr. X.'s mind is 'sicklied o'er with the pale cast of thought,' and he invites Mrs. X. to a ghostly study of experiences just expired.

II

The 'laws of association' are still supposed to be one of the most respectable assets of psychology, in spite of many rather harsh criticisms of 'association.' Indeed, most students of mental facts would agree that association is not the mechanical and atomistic process it is so often represented to be. Inasmuch as the little account we have just given is a good illustration of association in its most mechanical form, it may be interesting to comment on some aspects of suggestion as revealed by this case.

1. We may note that our true story has nothing to do with logical thinking and that it is free from emotional values. Even 'Juggernaut' appears free from its emotional fine linen, owing its appearance to its recency, to its mechanical resemblance to 'juggerrum,' and to the fact that it is a piece of experience 'shared' by the two parties of our story. But it is evident that the series would never have occurred if the 'laws' of similarity and contiguity were the only modes of association. For the very reason of being of the series is due to social *en rapport* and responsiveness. We may note further that the rhythm-attitude is present all through the give-and-take of a rather listless mentality.

2. One is strongly tempted to call our story a case of 'association by community.' There is community of time, place and circumstance; community of interests and experiences; conscious *en rapport* and responsiveness. Nowhere does the action go beyond the experience common, and *known* to be common, to both actors. May we not say that here we have a case of the psychological process underlying Adam Smith's 'sympathy' and Professor Giddings's 'conscious-

ness of kind'? Assuredly the series is not explained by the trivial congruity of such words as 'wicker' and 'wicked,' 'Juggernaut' and 'juggerrum,' and of such rhythmic resemblances as 'tum-tum-tum' and 'better-go-round.' True, these resemblances 'fire off' the various episodes; and continuity (contiguity) in experience determines each party's associative reactions; but both modes of association are cut across by the mutuality and 'give-and-take' of association by reciprocity or community. Each one's experience-continuity is checked and determined by features common-to-both. Would it, then, be 'mythological' to say that *social* similarity-and-contiguity is manifested by 'association by community'? May it not turn out that a careful study of all real and concrete experiences of association will show three phases of associative process—(1) continuity (contiguity), (2) congruity (similarity), (3) community (*en rapport*)? After all, in a sense it may be said that real association is fundamentally social and that 'psychological' association is but a pale abstract from the richness of social experience.

3. An 'ethological' study of our story would show practical interests and character-tendencies as the real powers behind the throne. For instance, we may note: singing for the children, the baby's doings, the other children, the wife's sickness, imitating animal cries to amuse the children. All these tendencies belong to the same general group, and therefore cooperate to keep agoing any attitude that is consonant with them. If the modes of association determine the *form* of the series, and the prevailing attitude its general contents, then it would seem that the instinctive tendencies or impulses determine its *special* contents. In our ordinary studies of association our interest is largely absorbed by the forms of connection, and the real motive-powers that decide *what* items shall be associated escape our attention.

4. Our case presents us with a typical instance of ordinary unhurried psychical action. We should, therefore, expect to find the essential 'mental elements' or psychical aspects pretty well marked.

Now this is exactly what we do find. Conspicuous are (1) *sensational* imagery, the 'substantive elements'; (2) relational elements, relations of continuity, community and congruity, corresponding to the three modes of association. The various forms of 'feeling' emphasize and evaluate the items of our experience, but here (3) instinctive *impulses* or tendencies may be said to share with sensations and relations the distinction of being the mind-stuff that *conduct* is made of. Indeed, feeling (pleasure-pain, emotions and moods) seems to be both *sensational and* impulsive, with relational elements in the background. And intellect and will are evidently complex functions.

Possibly a large and varied collection of the commonplace associations of daily life would afford fine material for that study of attitude and conduct which the ethology of the future must more and more emphasize in psychological investigation.

UNIVERSITY OF MISSISSIPPI.

THOMAS P. BAILEY.

REVIEWS AND ABSTRACTS OF LITERATURE

*Poetry and the Individual.*¹ HARTLEY BURR ALEXANDER. New York and London: G. P. Putnam's Sons. 1906. Pp. x + 240.

It is by no means easy to classify this book as respects its aim and purport, for its unity is due to its ideas and sentiments rather than its problem. It is designed to be the application of a philosophy (which remains for the most part in the background) to the 'analysis and interpretation of the experience of beauty' (p. 4). The experience of beauty the author believes to be most significantly represented by poetry, because in poetry 'the idealizing motive is most manifest' and because among the arts it best unites 'the impulsive charm of wild nature with the sensitive exclusiveness of artistic disposition' (pp. vii, 5). The term 'individual' appears in the title because to the author's mind all things are good in so far as assimilated to human personality, and because, more particularly, in the development of the sense of beauty, as elsewhere in the world's growth, is to be found an intensifying evolution of individualities (pp. 5 and 213). I shall here briefly resume the author's development of his theme.

The impulse to poetry is the instinct to express *mood*. Mood is 'a kind of insight' significant of 'what is deep-lying in character,' of what the author terms 'an impersonal personality,' an 'apotheosized, ideal self.' Ethical inspiration expresses itself in the ballad and epic, from which poetry diverges into the drama, which emphasizes the idea, and the lyric, which 'aims to win an emotional rather than an intellectual consistency,' and which through the very absence of explicit and literal articulation expresses the mood more adequately (p. 16). Such expression of mood is to be regarded as an end in itself, and is thus to be distinguished from scientific truth, which 'exists only for its utility' (p. 13).

In the development of poetry the author marks three stages: the *objective* and *dramatic*; the *subjective*, or *a priori*, based on the poet's conviction of the validity of his own personality; and the *introspective*. The last of these stages is best represented by 'modern lyricism,' which bespeaks the present-day social democracy with its elevation of the individual to the place of supreme importance. Contemporary tendencies—both ideals and misgivings—are to be understood as due to the incomplete adjustment of this new order, in which a hesitant self-consciousness

¹An analysis of the imaginative life in relation to the creative spirit in man and nature.

has already replaced the earlier natural and communal foundations of life. But the very pessimism of the modern world is significant of the transformation of a 'struggle for mere existence' into a 'struggle for ideal existence' (p. 63). The 'ideal good' which succeeds to instinctive or tribal aims must be '*that which is desired unfailingly and for its own sake alone*' (p. 72). Such a good, the author maintains, is to be found neither in material, moral nor intellectual goods, for these are instrumental; nor in happiness, which is variable and sometimes unworthy; nor in religion, for this is either instrumental, or mystical and hardly attainable. There remains only the esthetical good. Beauty is desired and exists for its own sake, absorbs all material and moral values, is disinterested, and is a profound expression of humanity. This supreme worth is both individual and social, in that 'sociability is a feature of individuality'; and is both universal and particular in that it is significant or constituted of meaning, and yet concrete. The present tendency of the individual to trust and utter himself is justified, not because worth is merely individual, but because the enduring ideal is to be found in 'things of the spirit' (p. 105).

The 'office of the imagination' is to enlarge the world, and liberate the spirit from habitual and communal thinking (p. 113). The elements of the imagination are classified as *presentational*, *ideational* and *emotional*. Sensuous imagery, to be strictly imaginative, must have its own characteristic synthesis, *i. e.*, must compose units expressing the action of the mind; and may be predominantly auditory, visual or verbal. The emotional elements of imagination belong to two distinct types: the esthetic emotion or judgment of beauty, which is intrinsically and finally satisfying; and the primitive feelings and emotions. The former can by no means be reduced to the latter, while the latter retain their specific quality when they respond to an imaginative occasion, and are not transmuted (Winchester) or objectified (Santayana). Thus, in tragedy such emotions as pain, fear, hatred, etc., remain such while at the same time entering into a unity which gives esthetic satisfaction.

The 'creative process' may be analyzed into (1) suggestion or spontaneity, the imagination's offering of concrete materials, and (2) the selective office of the esthetic judgment. The deeper cause of the whole process is 'the internal will—the guiding power of a life's ideals and the mold of its personality' (p. 171). The real motive of art creation is only secondarily commercial or social (Gummere); primarily it is 'instinct for beauty'—self-expression (p. 180). As previously stated, esthetic experience serves no utility, but is the final good—'the final justification of all fact and truth, of all life' (p. 193). It is the supreme instance of intelligibility, *i. e.*, of assimilation to the categories of personality. Personality, so regarded as the highest sanction of values, is human, but not empirical. It is vital, instinctive and growing.

Man's view of nature has passed through four stages of development: animism, personification, determinism and, finally, that rationality which 'sees her as embodying whole personalities, akin to man's, and existing,

as he exists, less for the sake of material realizations than for efficiency and growth' (p. 222). This is the final teaching: "That the whole worth of life is its endeavor to realize what seems to it most beautiful, that beauty is as much in the aspiration as in the ideal image and, finally, that all realization is but in renewed aspiring" (pp. 231-232).

It is difficult and perhaps unfair to criticize the author's philosophy in view of the fact that he avows his purpose to present it both untechnically and dogmatically. But it will be found, I believe, that his more important contentions are conditioned by their philosophical background, and suffer from the vagueness and incompleteness of its presentation. Thus, the author's criticism of the hedonistic esthetics is seriously weakened through his failure to complete his analysis and state the relation of pleasure to 'satisfaction.' Though he insists that disagreeable emotions are not transmuted to pleasure in the esthetic experience, he must on his own showing admit that they compose part of a whole giving esthetic satisfaction, and has not protected himself from the natural inference that satisfaction means *taking pleasure in*. A graver difficulty appears in the author's subordination of moral and intellectual to esthetic values. This is reiterated, but nowhere thoroughly substantiated. Dr. Alexander appears to have identified morality with convention, much as contemporary positivists identify metaphysics with speculative dogmatism, and to have lost sight of the fundamental problem of ethics. If there are any values which moral science is entitled to claim as within its own province, they are those of personality and development, and yet the author annexes these to the field of esthetics without a question.¹ He even suggests that 'certain spiritual activities—moldings of moral and religious character—belong to a sphere finer than that of art,' with no recognition of the general belief that all moldings of character are properly moral (p. 90). The same general objection may be made to the author's depreciation of cognitive values. These are on the whole regarded as strictly instrumental, though with an apparent contradiction.² But where is the warrant for this sweeping proposition? The author's subordination of moral to esthetic categories forbids us to look even to pragmatism for relief. No critical reader can be satisfied with the escape which the author makes elsewhere: "That there are logical difficulties besetting this as every other abstract conception, I will not deny; but there are deliverances that more than compensate" (p. 222). I have no doubt that the author is well fortified in his positions, but I think it worth while to point out that the presence of only 'a little philosophy' may seriously imperil the effectiveness of a special study.

Since the author manifests both the love of writing and no little skill therein, I may perhaps be permitted to add that his style impresses me as surprisingly inconsistent. It is both brilliant and stilted, fluent and awkward. How does a writer who can express himself with so much

¹ Cf. pp. 207, 209-210.

² Cf. p. 149.

freedom and power⁴ find it in him to write, "Helpful here may be illustration" (p. 39)? There is evidence of a straining after rhetorical effect, and of a fondness for unusual, if not original, words. The result is that at critical points, as for example in the introduction of such fundamental ideas as mood and personality, the author fails to make his meaning clear. It seems then too late to be simple and direct. The style which so adequately renders the author's appreciations, mysticisms and rhapsodies is not a proper vehicle for exposition.

The book is most admirable for its sympathetic and sure apprehension of the present age (its individualism, introspection and courageous faith) and for a captivating strain of poetry and eloquence which pervades the whole.

HARVARD UNIVERSITY.

RALPH BARTON PERRY.

Che cos'è il bello? MANFREDI PORENA. Milan: Hoepli. 1905. Pp. 483.

In this rather lengthy work the author has given to the Italian public a presentation of esthetic problems and facts which, unfortunately, has not its like in English literature. The author is not interested either in filling out a philosophical system or—at least not very greatly—in elementary psychological experiments: as a result what he has to say seems eminently adapted to the needs of a much larger reading public than the majority of esthetic theories can appeal to. Furthermore, the attention given to specific esthetic elements in painting, sculpture, elocution, architecture, music and literature must make the book interesting reading to almost any one.

The work proper,—omitting an appended criticism of Benedetto Croce's esthetic theory,—falls into two parts, 'Esthetic Elements in General' and 'Elements in the Principal Arts.' The wealth of material in the second part makes it quite impossible to pass comment upon it. Only the first half, then, will be reviewed here.

In the introduction to Part I. (pp. 1-19) the meanings of 'beauty' and 'beautiful' are discussed. "The beautiful is that which has come to be so called; this is our point of departure at least" (p. 4). Beauty is not a predicate of 'lower' sensations; these have feeling tones as accompaniments, but 'in colors and tones we find the beauty in their bare sensation qualities' (p. 9). "We can call a light beautiful even when the sensing of it is painful" (p. 10). From this the author concludes that the esthetic pleasure is not a true sensation quality, but a 'spiritual' one. Beauty is finally defined much as the majority of estheticians define it, namely, as 'that which pleases the soul as an objective quality' (p. 16).

In the second section, treating of 'il bello sensibile,' Porena denies the possibility of classifying colors and tones with reference to their esthetic value; we can at best classify their beauty as immediate or mediate, but this is a genetic rather than a qualitative classification. The author follows this genetic distinction. Immediate beauty can be explained only as that which is a direct result of our organism; into the

⁴ Cf. pp. 72-79. 92, 93.

details of explaining what peculiarities of this organism are of importance the author does not go, and might be censured for this failure by many investigators who are on the search for genuine contributions to psychology. It is to mediate or relative beauty that by far the greater attention is given; typical and teleological beauty are the two kinds of mediate beauty most easily distinguished. The former is called 'habitual' beauty and, as such, may be found even in an object which, when judged in its immediate aspect, is ugly (p. 57). The author goes so far as to say that typical and immediate beauties are antagonistic (p. 63), but this is an overstatement of the facts which is partially retracted later on. Final beauty is pronounced the most objective kind (p. 69), by which is meant that the end served by the object is the *raison d'être* of the object. It is, however, doubtful whether this fact can fairly be used to interpret the beauty as 'objective' in any ordinary sense of this term. Indeed, the author uses the term 'objective' in the sense of 'social,' inasmuch as he admits that the opinion of the majority of men is decisive in matters of teleological beauty (p. 70).

After touching briefly on the beauty of execution and that of imitation, the writer attacks the problem of expression. Here most strenuous opposition is made to the *Einfühlung* theory, although it is not beyond suspicion that the writer has misconstrued this hypothesis in some points. "It is not the inner commotion aroused by seeing a mountain . . . but the meaning of the object that is beautiful" (78 ff.). This the adherents of the criticized theory could well admit and still insist that the origin and structure of the *meaning* of the mountain must be explained in their way. Porena urges as fundamental the distinction between inner and outer association, claiming that inner association (connection between image and feeling tones or factors induced by the latter) is only secondary, a mere aid to outer association (89). Lipps's views are here flatly contradicted; their surest disproof Porena finds in the emotional reactions to instantaneous photographs of running men, wherein most of the poses induce wholly different meanings (hence feelings) in the spectator because the normal outer association (the long series of rapidly shifting poses) is lacking (93). One must seriously doubt whether this will prove a stumbling-block to the German school. The greater part of the section on expression is devoted to a concrete study of types of expression in man, animals, inanimate objects and geometrical forms; facts, deeds and situations are likewise investigated as classes. Here, as in the latter half of the book, the author discloses a tremendous wealth of finely observed facts.

The last section of Book I. deals with 'inner beauty.' By this the author means that beauty which is represented, but not that beauty which is essentially in the representative character of the object. Inner beauty is the complement of purely sensuous beauty and is subdivided by the writer in about the same manner; immediate inner beauty is that which appears by virtue of (a) the intensity or force of the represented object or else (b) the quality represented (135). These subtypes are called

'dynamic' and 'sympathetic' beauties. The mediate inner beauty, on the other hand, depends upon secondary characteristics of the object, chiefly upon type, purpose and imitativeness.

At this point the general theoretical part ends, and the special arts are studied. From the standpoint of pure psychology the abandonment of esthetic types in favor of expression types may seem heretical; we find the treatment of the tragic, the comic, the sublime and so on subordinated to study of (I.) 'ideomimetic' arts, (II.) 'free' arts and (III.) speech and thought. The mass of information and the amount of criticism displayed are quite remarkable and make reviewing impossible.

The general impression made by the whole work is that it is neither eccentric nor revolutionary, but rather a sane and capable presentation of esthetic problems, worthy of perusal by specialist and student alike.

COLUMBIA UNIVERSITY.

WALTER B. PITKIN.

La Psychophysiologie du langage musical. JOSÉ INGEGNIEROS. *Revue de Philosophie*, April, 1906. Pp. 386-408.

By musical language Dr. Ingegnieros means employment of the tones of the musical scale and of their conventional symbols in singing or in playing on musical instruments, and the imagery used in thinking of these various activities either in recall or in composition. His object in this article is to describe its origin, growth, physiological and psychological mechanism, and modifications in individuals. This he accomplishes chiefly through comparison with the more closely and extensively studied phenomena of ordinary speech or, as he terms it, articulate verbal language. He points out, to begin with, that both verbal and musical language, especially after they have assumed graphic form, involve complex and constant coordinations, a definite system of symbols.

His statement of the vexed question of the origin of language, whether verbal or musical, is brief. The view is upheld that both originate in reflex sounds, and are not separated in the earlier stages, all language having musical inflections or cadences. Later comes simple melodic elocution, as in the lyric *recitatif* of the Greeks. Gradually words and music become separated; melody without words emerges; the simple rhythmic accompaniments which make up the instrumental music of primitive peoples are replaced by melodic instruments; and we have two parallel series—speech for the expression and communication of ideas, and music, vocal and instrumental, for the expression and communication of sentiments and emotions. The resemblance of this theory to Spencer's is obvious, though music is made coordinate with speech and not merely derivative from it. With the progressive evolution of both speech and music appears a new stage in each, that of written symbols, developing from a rudimentary to a well-organized system.

These two stages, of spoken and of written language, are manifested in each individual. There is first a natural or spontaneous education in spoken language and in singing and, perhaps, in playing some instrument by ear; second, a technical education in the reading and writing of verbal

and musical symbols and, in the case of music, a further technical training in playing upon one or more musical instruments.

In spontaneous musical language without technical training, only two kinds of musical images can be employed, auditory and phonic, or motor images of articulation in singing. A person of the auditory type in recalling or composing music hears mentally; a person of the phonic or articulatory type sings mentally. With technical musical training other types of imagery enter in, although the auditory and the phonic types probably remain dominant. A person may have visual images of the score, may read music mentally; he may have motor images of execution upon some particular instrument; he may have graphic-motor images, of writing the appropriate notes, although this is rare save in the case of a few composers or of copyists of music; he may avail himself more or less indifferently of all types, though the evidence goes to show that the conspicuously musical have one predominant type. The musical imagery employed, of whatever type, depends, like all imagery, partly on native equipment, partly on education. Visual imagery of musical notation and motor imagery of instrumental performance and of writing music are, of course, in these specific forms, due to education, although developed upon a basis of natural predisposition.

Dr. Ingegnieros maintains that those naturally of the auditory type may be persistent practise in singing or playing change to the auditory-motor, or even to the pure motor type, either phonic or instrumental. In the case of musical visualists, those singing or playing from mental score, visual images may with practise be supplanted by motor. Such persons make little use of auditory imagery; they have not 'good ears'; yet by means of motor images they are able to sing or to play correctly without dependence on the written score. He would hardly assert, however, we presume, that such musical visualists possess the musical ability of persons of the auditory type. This evidence, if borne out, tends to show that in learning a complex act the drift in imagery is not necessarily from 'resident' to 'remote,' as is sometimes held. It supports the view of Angell and Moore¹ that attention fastens upon the more complex and less easily controlled phase of the coordination. In general it shows that the sensory nature of the cue-image is relatively indifferent, so long as it serves its function.

Dr. Ingegnieros gives the order of frequency in musical imagery as follows: For those without musical training, (1) auditory, (2) phonic or articulatory, (3) complete or indifferent; for those with musical training, (1) auditory, (2) phonic, (3) instrumental-motor, (4) visual, (5) graphic, (6) complete or indifferent. As is readily seen, the types of imagery used in musical language correspond closely to those used in ordinary language. In ordinary speech, however, there is nothing corresponding to the motor images of instrumental execution, except in the cases of typewriting, compositing, etc. Dr. Ingegnieros mentions such cases as parallel, but makes much of this additional complex coordina-

¹ *Psychological Review*, Vol. III.

tion involved in musical language, saying that it 'has never been mentioned nor described until now.' However this may be, the process of learning to play on a musical instrument does not differ essentially from learning to perform any complex skilful act; and such a process has of late been subjected to experimental control and abundantly described by Swift, Bair, Leuba and others.

With regard to the cerebral conditions governing musical language the writer agrees with the accepted authorities in asserting that the musical centers are subcenters of the corresponding areas for verbal language. He bases his statement that they are functionally specialized as well as intimately connected with the general language centers on the well-known fact that aphasia is sometimes accompanied and sometimes unaccompanied by amusia. But he does not canvass the available data nor add any new pathological evidence. He also raises the question as to how far bimanual instrumental execution and musical language in general are controlled by the left hemisphere of the brain, and holds it still unproved that such specialization is rigid either for verbal or for musical language. He seems unfamiliar with Baldwin's chapters on the 'Origin of Right-Handedness' and on 'Internal Speech and Song in Mental Development'; and in general makes no reference to the large literature on the function and disorders of speech and to the lesser, but respectable, literature on musical imagery.

The article gives a clear description of the recognized facts of musical language, but it presents no new experimental or pathological data, and suggests that there is still room for thorough investigation of the subject. It assumes that the facts of localization and imagery are simpler and more definitely established than the recognized authorities hold them to be, and hardly does justice to their functional aspects, either physiological or psychological.

ELIZABETH KEMPER ADAMS.

SMITH COLLEGE.

La beauté rationnelle. G. BERTIER. *Revue de Philosophie*, April, 1906. Pp. 409-414.

This article is a brief statement of the cardinal principles of Souriau's 'La beauté rationnelle,' published in 1904; and any appraisal of it must either take the attenuated form of reviewing a review or go back to the original treatise. Souriau's main contention is that beauty is not 'merely subjective,' a matter of individual sensation, taste and sentiment, but is due to the control and organization of these elements by the 'laws of reason,' by judgments of universal validity. This organization reveals itself to consciousness as evident—immediately manifest—perfection. And the essence of perfection resides in the adequate realization of the appropriate end. All ends, however, are not of equal esthetic importance. That has greatest esthetic value which contributes most fully to the conscious life of man.

The phraseology employed is so foreign to that of current esthetic theory as to give a somewhat quaint and formal tone to both book and article.

It carries us back to Kant and even to Aristotle. But we have swung so far from an intellectualistic treatment of esthetics that it is no doubt salutary to recognize the highly organized character of the esthetic experience and the part played by judgment in its upbuilding and consolidation. Souriau's distinction between the subjective and the objective is open to criticism, and his use of such terms as 'reason' and 'sentiment' suggests an outworn psychology, although he insists that they refer not to bare 'faculties,' but to modes of concrete mental operation. Bertier quotes the schoolmen in support of the view of beauty as perfection, inverts Kant's valuation of free and dependent beauty and criticizes his treatment of the sublime. Whoever wishes to acquaint himself with Souriau's position will do well, however, to get at it at first-hand rather than through Bertier's article.

ELIZABETH KEMPER ADAMS.

SMITH COLLEGE.

JOURNALS AND NEW BOOKS

THE AMERICAN JOURNAL OF PSYCHOLOGY. April, 1906, Vol. XVII, No. 2. *Crying* (pp. 149-205): ALVIN BORQUIST. - "Crying occurs under many different mental and physical conditions, but its essential element, psychologically, proves to be a feeling of helplessness in the infant shading into a feeling of hopelessness and surrender of effort in the typical adult cry." *Wundt's Doctrine of Psychical Analysis and the Psychical Elements, and Some Recent Criticism* (pp. 206-226): EDMUND H. HOLLANDS. - When the whole development of Wundt's doctrine of feeling is examined, none of this criticism (by Dr. Washburn) is valid. But it is useful in pointing out inadequacies in the immediate statement of the doctrine, and may perhaps lead to an attempt at a final definition by the author himself. *Peripheral and Central Factors in Memory Images of Visual Form and Color* (pp. 227-247): ELSIE MURRAY. - The persistence, distinctness and general accuracy of reproduction are conditioned by the relation of the stimulus or image to central conditions, and certain special motor phenomena accompanying fixation. *Further Study of the English Sparrow and Other Birds* (pp. 248-271): JAMES P. PORTER. - The experiments show some differences between them in the ability to learn, in memory, and in the perception and discrimination of form and color. More marked are the differences in emotional and volitional states. *Hypnagogic Images and Bi-vision in Early Childhood* (pp. 272-273): ALEXANDER F. and ISABEL C. CHAMBERLAIN. - Some of the psychological and physiological phenomena now on record only for a much older period of life occur also in childhood and are perceived by children, and may possibly exert some influence upon the development of the individual. *The Electrical Supply in the New Psychological Laboratory at the Leland Stanford, Jr., University* (pp. 274-279): LILLIEN J. MARTIN. *Psychological Literature. Book Notes.*

- Deussen, Paul. *The Philosophy of the Upanishads*. Translated by A. S. Gelden. Imported by Charles Scribner's Sons. \$3.50.
- Joseph, H. W. B. *An Introduction to Logic*. Oxford: The University Press. 1906. 9s. 6d.
- Laurie, S. S. *Synthetica, Meditations Epistemological and Ontological*. The Edinburgh University Gifford Lectures for 1905-6. Vols. I. and II. London: Longmans and Co. 1906. 8vo. 21s.
- Lotsy, J. P. *Vorlesungen über Dezzendenztheorien mit besonderer Berücksichtigung der Botanischen Seite der Frage gehalten an der Reichsuniversität zu Leiden*. Erster Teil. Jena: Gustav Fischer. 1906. Pp. xii + 384. 8 M.
- Major, David R. *First Steps in Mental Growth*. New York: The Macmillan Co. 1906. Pp. xiv + 360. \$1.25.
- Ross, G. R. T. *Aristotle's de Sensu and de Memoria*. Text and translation with introduction and commentary. Cambridge: The University Press. 1906. 8vo. 9s.

NOTES AND NEWS

Nature (June 28) notes as follows the contents of a paper by Mr. M. H. Godby on the place of natural science in education, which appeared in the May issue of the *Transactions of the Oxford University Junior Scientific Club*: "The spirit of the paper provides an encouraging sign of appreciation of the value of scientific studies, and serves to show that a generous recognition of the importance of a training in the methods of science is producing a beneficial effect upon the present generation of Oxford students. Mr. Godby first indicates the influence on British education exerted by Bacon in directing the attention of speculative thinkers to the importance of founding theories on knowledge gained from the senses, and subsequently refers approvingly to Herbert Spencer's insistence upon the necessity of training the body and the value of a scientific education. As indicative of modern tendencies at Oxford one or two of the writer's remarks may be cited: 'The man of science perhaps alone of all men understands and appreciates the value of working hypotheses, even when they are wrong.' 'A great charm, too, of science is that one can always appeal against the decisions of tutors and authorities to Nature herself, and so there is produced a freedom from the awe of authority which must tend to develop self-respect and to encourage independence and originality.' 'Science is more capable of arousing the interest of its students than other subjects. There is a sort of spirit of antagonism, a feeling that you are pitting yourself against Nature and trying to unravel her secrets, and this feeling is just what will always appeal to the sporting instincts of English boys.' It is satisfactory to find that young Oxford is alive to the responsibility of the university for the growth of scientific knowledge."

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

REALITY AS POSSIBLE EXPERIENCE¹

THE first volume of Royce's 'The World and the Individual' is a critical exposition of four historical conceptions of being. The first conception, that of realism, defines the real as that which is independent of and external to our idea of it. The second conception, that of mysticism, defines it as the immediate or that which is immediately felt apart from any definition of it. According to the third conception, the conception of critical rationalism, the real is the true or valid. The fourth conception makes it consist in the whole meaning of a system of ideas in a completed experience; this is the absolute of constructive idealism.² The first three conceptions are for Royce inadequate; although the independent, the immediate and the true stand for important phases of the real, it is only in constructive idealism that he finds a satisfactory account of reality.

It is the problem of this paper to examine the third conception, the real as the true or valid, and to show that it is an adequate conception of reality. It will be shown that this conception, when taken in the fullest and most accurate form in which it appeared in the history of thought, is a sufficient answer to the problem as to the nature of reality, and that it includes what is good in the first two conceptions and renders the fourth conception unnecessary.

The conception of reality as the true or valid is, according to Royce, the conception of 'possible experience' ('mögliche Erfahrung'), which was first developed by Kant and which has played an important part in the philosophy of science.³ It is not that which is independent of the mind and its ideas, nor is it the immediate experience as it is felt, but it is the 'determinately possible' experi-

¹ Read at the joint meeting of the Section of Anthropology and Psychology of the New York Academy of Sciences and the New York Section of the Psychological Association, held at Princeton University, Princeton, N. J., on February 26, 1906.

² Royce, 'The World and the Individual,' Vol. I., pp. 60, 61.

* ³ *Ibid.*, pp. 205, 233-9.

ence (p. 227). It is that which is ideally defined in universal terms and at the same time embraces all that could come within the realm of experience. It is not limited to the experience which human beings actually have, but it includes all that which is connected with experience, though not directly experienced, and which would be experienced if conditions were other than they are. Reality is then, according to this conception, all actual and possible experience in so far as it is ideally determinate.

Royce criticizes this conception because it makes the real purely universal and allows it no individual character (pp. 240, 241). The world of possible experience is a world of 'more or less valid and permanent ideas.' But such 'valid and permanent ideas' would seem to be 'only forms' without the genuine reality (pp. 243, 244). How can this ideally determinate possible experience as purely possible or formal have the individual concrete quality of that which is real? If we ask what experience is possible, we can only learn by going to actual experience. Yet at the same time we are aware that there is a vast realm of possible experience which can never be put to the test of actual experience (pp. 258, 259). Possible experience is made up of all actual experience plus all purely possible experience. But, says Royce, "What is . . . possible experience at the moment when it is supposed to be only possible?" (p. 260). "What is a mere possibility when not tested?" (p. 269). Just as the truth, the determinate quality, of actual experience depends on actual experience itself and is devoid of meaning without reference to actual experience, so in the case of the purely possible experience taken as truth must we not admit some counterpart of actual experience, something actual to which to refer this purely possible experience? To Royce a 'mere possibility' is equivalent to nothing. In order that the merely possible experience be real it must, according to him, 'be pulsating with the same life of concrete experience' as is the case with our actual experience (p. 261). Thus to make all the possible world replete with actual or immediate experience Royce is obliged to develop his fourth conception of reality, according to which the real is a complete and absolute experience including the whole realm of the possible.

When Royce cites Kant as the 'father' of the conception of 'possible experience' ('mögliche Erfahrung'), it is unfortunate that he does not consider the conception from the Kantian point of view. For by developing it along lines foreign to Kant, he is able to find certain difficulties connected with it; whereas if he would approach it in the Kantian spirit, such difficulties would be avoided. Taken by itself 'possible experience' is ambiguous, for the conception of 'experience' may be used in two different senses. 'Experience'

may either mean the actual immediate experience which human beings have, and this is the sense in which Royce takes it, or it may mean the knowledge gained from such experience. If we examine the 'Critique of Pure Reason' carefully, we shall find that Kant employs the conception of 'experience' in this latter sense. He identifies it with 'empirical knowledge,'⁴ that is, knowledge based on actual immediate experience, but not the immediate experience itself. The *immediate* experience he would call 'perception' ('Wahrnehmung') or 'intuition' ('Anschauung');⁵ but 'experience' is for him a synthesis of perceptions or of intuitions,⁶ it is essentially a kind of knowledge. 'Possible experience' would then mean knowledge which could be based on immediate experience or which it would be possible to verify by means of an intuition or a perception; and in many passages⁷ in the 'Critique of Pure Reason' Kant uses the expression in this sense. On the other hand Royce means by 'possible experience' all that could become actually experienced by human beings if their experience were not limited, as happens to be the case. Thus while Kant lays the stress on the knowledge which can be gotten from actual experience, Royce's interest is centered on the possibility of actually experiencing experience. It is not, therefore, fair to Kant for Royce to mention Mill's conception of the 'permanent possibilities of sensation' as an elaboration of this same theory of reality.⁸ From the whole trend of the discussion of this conception by Mill it is clear that he is attempting to define reality from the point of view of sensation much as Royce does from the point of view of immediate experience. Mill even makes the distinction⁹ between 'actual sensation' and the 'possibilities of sensation,' as Royce does

⁴ Kant, 'Kritik der reinen Vernunft,' Hartenstein's edition, p. 135, where he says: 'Empirische Erkenntniss aber ist Erfahrung'; and p. 175, where he says: '. . . Erfahrung d. i. empirische Erkenntniss . . .'; also pp. 124, 165, 199, 206, 507, 582.

⁵ *Ibid.*, pp. 61, 261.

⁶ *Ibid.*, p. 165, where he says: 'Erfahrung . . . ist also eine Synthesis der Wahrnehmungen, die selbst nicht in der Wahrnehmung enthalten ist, . . .'; and p. 41, where he says: '. . . Erfahrung, die selbst eine synthetische Verbindung der Anschauungen ist, . . .'; also pp. 33, 132.

⁷ *Ibid.*, pp. 80, 112, 142, 147, 162, 173, 193, 210, 252, 346, 520. These references are simply references to typical passages in which 'possible experience' is used in this sense.

⁸ Royce, 'The World and the Individual,' Vol. I., p. 239. Mill develops this conception in his chapter on 'The Psychological Theory of the Belief in an External World' in his 'Examination of Sir William Hamilton's Philosophy,' London, 1889, pp. 225-239.

⁹ Mill, 'Examination of Sir William Hamilton's Philosophy,' p. 230.

between actual and possible experience. Neither Mill nor Royce could, therefore, maintain that he was a follower of Kant.¹⁰ For Royce's reality, as well as Mill's, is in terms of immediate experience, whereas Kant's reality is in terms of knowledge.

Since Kant means by 'experience' a certain kind of knowledge, we may well ask if he does not mean to include in his conception of 'possible experience' the conditions of experience. In the 'Postulates of Empirical Thought'¹¹ he tells us just what he means by the 'possible,' namely, the 'formal conditions of experience,' the *a priori* principles which lie at the basis of empirical knowledge. Thus the conception of the 'possible' is the conception of the 'possibility of experience' ('die Möglichkeit der Erfahrung').¹² Although there are many passages, as we said above, in which Kant uses 'possible experience' as knowledge which can be verified by perception, there are other passages in which 'possible experience' comes very close to meaning the 'possibility of experience.'¹³ At least the term 'possible' in 'possible experience' points to the *a priori* conditions as that which renders experience possible; it is the problem to which those conditions form the solution. To preserve the two senses in which 'possible' is used, it would be necessary to call Kant's world the possibility of possible experience. But at any rate to keep the perspective of his thought and at the same time to treat 'possible experience' as a conception of reality, we can not afford to disregard the 'possible' as the fundamental conditions of experience, whatever else we may let it include. And even if Royce intends to leave this side of the conception out of account, he can not identify it with his own conception of the 'possible' in 'possible experience'; for though he admits that experience may be described in universal terms, the center of gravity of his conception lies in the experience as experi-

¹⁰ There is, to be sure, a passage in Kant ('Kritik der reinen Vernunft,' p. 197), which is quoted by Royce ('The World and the Individual,' Vol. I., p. 237), where Kant distinguishes between 'wirkliche Wahrnehmung,' and 'mögliche Wahrnehmungen,' but in doing so he uses the term 'Wahrnehmung' and not 'Erfahrung.'

¹¹ 'Kritik der reinen Vernunft,' p. 192.

¹² *Ibid.*, pp. 112, 135, 136, 151, 152.

¹³ *Ibid.*, p. 135, where he says of 'mögliche Erfahrung' that the categories make the 'Erfahrung möglich'; and p. 152, where he corrects himself in the use of the term 'möglich' in connection with 'Erfahrung,' thus, '. . . daher sich jene reine synthetische Urtheile . . . auf mögliche Erfahrung oder vielmehr auf dieser ihre Möglichkeit selbst beziehen . . .'; also pp. 171, 280. There are also many passages in which 'mögliche Erfahrung' is used where it is impossible to determine in which sense he wishes it to be understood. I refer to those passages in which he contrasts the field of 'possible experience' with the noumenal world beyond; the following references are to passages of this kind: pp. 10, 37, 138, 201, 216, 245, 287, 476.

enced, while Kant's whole interest is in the 'possible' as a form of knowledge. Had Royce adopted the Kantian point of view in its fullest sense, he would have avoided the difficulties involved in trying to characterize reality as immediate experience. But his interest being ontological rather than epistemological, he avoids those factors in knowledge by means of which 'possible experience' can be rendered a consistent and adequate conception of reality.

But let us return to Royce and allow experience to mean immediate experience as experienced. 'Possible experience' would then mean all the immediate experience we could have under all possible conditions of life. A purely possible experience would be something which we should experience if the conditions of our lives were other than they are. The other side of the moon and the interior of the earth would be examples of purely possible experiences. That this sort of possible experience is as experience a mere nothing, as Royce would maintain, is quite true; that is, taken as experience it is not actually experienced and is therefore equivalent to no experience. But the conception of the 'possible,' as developed by Kant, is not a mere nothing as a means for explaining and limiting actual experience or as a world of conditions according to which actual experience takes place. It is no more necessary for the world of the conditions of experience to be replete or alive with actual experience than it is for the conditions imposed on the will by the moral law to be ever completely fulfilled by the will. The actual experience which we have, fragmentary as it is, is sufficient to give point and life to the conditions of experience. Royce's mistake lies in his taking possible experience from a material point of view rather than from a formal point of view. It is certainly true that this conception of reality is inadequate if we start from the point of view of being and ask how much actual individual being there is and then what its quality is. But if we accept the existence we have in experience, then from the standpoint of knowledge the possibility of experience is the fullest account of reality which we can give. Let us develop this idea more fully.

Reality as possible experience gives us two main terms,—the possible and experience. The possible, we said, stands for the necessary conditions of experience and experience for the actual experience which we as human beings have. Now since both these elements go to compose reality, they must in some way be related to each other. If we took the possible by itself, we might construct all sorts of possibilities, but irrespective of experience we could never find the possibility of *experience*. On the other hand, if we started with experience and never took into account its necessary conditions, we should only have on our hands a lot of incoherent

isolated bits of experience. The relation between the possible and experience must then involve some sort of mutual dependence. This relation can best be explained if we start with some concrete piece of experience and ask what it means. If we ask how many letters there are on this page, in doing so we not only involve the experience of the page with the letters on it, but we also enter the world of the possible, namely, the possibility of number. If we ask further questions, we get to further possibilities, and if we ask for an explanation of all the relations in the experience, no explanation would be sufficient short of the complete possibility of experience, all the fundamental conditions of experience. From this it is easy to see that experience sets a problem to which the possible is the answer. Without experience the possible would have no *raison d'être*, and without the possible experience would be meaningless. Experience limits the possible in the sense that the possible must be a system of conditions such that it explains experience; and the possible limits experience in so far as it is a system of conditions to which experience must conform.

Although the possible is thus dependent on experience for its problem, it has its own degree of independence. Not only must it be consistent with experience, but it must also be consistent with itself. For it is a body of principles forming a system of the conditions of experience, and such principles can not be valid unless they are internally consistent. To make this clear let us return to the example, used above, of the number of letters on the page. In so far as we fall back on experience for the actual letters and the page which we can see, the possible number of letters found is dependent on experience; in so far, however, as we look for the inner consistency of number itself, that is, in so far as we might take into account that fifteen plus sixteen makes thirty-one, we should be concerned with something independent of experience. If we asked for the particular part of space which this page occupied, we should be forced into the problem of a three-dimensional space, but all that is true of a three-dimensional space, the truths of geometry, etc., could be constructed independently of experience. The possible is then ideal truth. It is constructed for the express purpose of knowing the conditions of experience, but it has its own principles and its own interrelations which hold quite apart from its application to any particular problem.

But it may be objected that the possible, being a constructed system of ideal truth, is necessarily constructed by the mind, and since what takes place in the mind is a part of experience, the possible is ultimately a phase of experience. But this is to misunderstand the nature of ideal truth. It may be true that it takes a

mind to actually construct a system of truth, and it may be true that the principles of truth are in the form of ideas and hence as ideas involve a mental relation; but the essential meaning of truth can not be characterized in this way. When the mind constructs a system of ideas, it can not construct them as it pleases, nor does it construct them according to some mental principle; it constructs them according to the criteria or principles of truth, according to the principles of identity and difference, unity and multiplicity, etc., which principles are far more universal and objective than any mental principle. Truth as a system of ideas can not be characterized as simply ideas in the mind. The truth contained in ideas has nothing to do with their relation to the mind; it lies entirely on the side of the meaning of the ideas. That fifteen plus sixteen equals thirty-one, is not dependent on the relation of fifteen plus sixteen or thirty-one to the mind, but on their relations to the principle of identity. In fact, the relation of a system of ideas to the mind is a relation over and above the truth contained in the system. Not only can we say that the principles of truth can not be reduced to mental relations, but no mental relation can be determined without a reference to the principles of truth. Just as the possible taken as a system of conditions is dependent on experience for its problem, so it is also dependent on the mind to put these conditions together; but the principles of the possible, the relations it involves and their necessary implications, are as independent of the mind as they are of experience.

We have now developed the essential characters of the conception of possible experience, and those characters include the main elements which Royce finds in the first three conceptions of reality which he develops, namely, the elements of independence, immediacy and ideal determinateness. It is not necessary to develop a fourth conception of reality, as Royce does, to unite all these elements, for we have shown how they all have a place in possible experience. The element of independence is to be found in the freedom of the principles of ideal truth from any principle of the mind, the element of immediacy in the actual living experience, and the element of ideal determinateness in the very nature of the possible as the ideal truth which conditions experience. The independent and the immediate are the poles of possible experience, while the ideal determinateness expresses their interrelation. We may, then, define reality as an ideal system of relations constructed independently of mental relations according to the criteria of truth for the purpose of making experience intelligible, and including the immediate experience itself.

This ideal system of relations is to be found in the world of

physical science. That the physical world is largely independent of actual experience and extends far beyond it is due to the relations which space and time involve in so far as they are based on the criteria of truth. The immediate experience characterized irrespectively of the ideal system corresponds roughly to the psychical world. That the whole physical world is filled up with immediate experience, or that it is as a whole immediately experienced, we have no right to assume, for there is not ground for assuming the existence of immediate experience except where we know there are psychical centers. Immediate experience is only to be found at certain points of the ideal system; the physical world and the psychical world are not coextensive. To make reality an ideal system teeming with experience,¹⁴ as Royce does, is quite unnecessary and is mainly due to a mistake in the motive for setting up a reality. The only reason we develop a system of reality at all is to give unity and connection to the various phases of experience, or, as it is more usually put,—interest in the problems of reality is interest in the ultimate unity and higher relations of life. The ideal system of the physical world is a system which gives unity and connection to experience. After thus unifying experience nothing is gained by bringing the separate centers of experience together in one experience or by having the gaps between those centers of experience in some way experienced. There is nothing in the nature of experience as experience which requires that it be one rather than many. The demand for unity is a purely ideal demand, and the physical system gives us just what this ideal demand requires. The ideal demand makes no stipulation as to the oneness or manyness of experience as experience, it only postulates the intelligibility of experience, its ideal unity and relations. Therefore, a metaphysical unity of experience, such as Royce develops, can neither be verified empirically nor can it from an ideal point of view be proved.

But after all, it may be asked, what is the criterion of the real? Is reality real because it falls within an ideal system or because it can be experienced and immediately felt? Reality, we should answer, would not be real unless it were both an ideal system and in

¹⁴ By saying that Royce's reality is 'teeming with experience' we do not mean that experience is a sort of stuff thrown into the ideal system after it is constructed, but simply that whatever the reality turns out to be ideally, even if it involves an 'infinite totality' (Royce, 'The World and the Individual,' Vol. I., p. 583), it must be such a world that it is 'not merely valid, but presented' as an experience to an absolute self. According to Royce there are infinite possibilities from among which the absolute will chooses certain possibilities to make up its ideal world. This world is thus fundamentally a result of the will, and it is chosen by the will as that ideal world which shall be 'presented in experience' (p. 573). This being present in experience or being experienced is essential to Royce's conception of reality.

some sense involved experience. The ideal system gives us the meaning, the scope and the implications of reality. It is also a test of the real that it be experienced, but this does not mean that all that the ideal system defines must necessarily be actually experienced. In order to distinguish the ideal system of the physical world from any possible world that might be imagined it must be understood as that system which includes immediate experience somewhere within it; the experience is simply a point of departure into the ideal world, and it is an essential point of departure. We may, if we choose, limit the term reality to the ideal system, and call experience existence. But ultimately we must admit both elements into our world; and in such a world we have experience standing for the problematic factor and the ideal system for its complete meaning and final order.

We started out in this paper with a consideration of the conception of possible experience as developed by Royce. We went on to point out that he did not develop it along Kantian lines, but that by taking it from Mill's point of view he was able to show its inadequacy, and in consequence the need of his own constructive idealism. We then developed briefly the Kantian conception, and thereby we made clear not only that possible experience was an adequate conception of reality, but that Royce's constructive idealism was based on a mistaken motive. We should, furthermore, be willing to maintain that possible experience is the only adequate conception of reality, though it is impossible to show this within the limits of this paper. The great advantage, however, of this conception is that it gives us a sufficient ideal basis for science and at the same time keeps within the bounds of experience. Though physical science may develop new concepts within the possible and experience may give us new problems, we can never hope to get beyond the realm of possible experience.

M. PHILLIPS MASON.

PRINCETON UNIVERSITY.

TWO TYPES OF CONSISTENCY

IN a previous article¹ consistency was defined as the immediate self-maintaining quality of experience. This does not mean a mere tendency in activities to repeat themselves mechanically. No scheme of stereotyped activities is conceivable in which friction and self-erosion are not present. No list of moral rules covering the activities of life can be so constructed that they can always be obeyed. In obeying one we are sure at times to disobey another. No system of mechanical formulæ has ever been devised which does not leave

¹ This JOURNAL, Vol. III., No. 5.

many questions unsolved. Perpetual motion in any form—ethical, physical, logical—is ‘mere appearance.’ No machine ‘covers its own reality’ or constitutes a self-maintaining whole. Individuality and incommensurability go deeper than mechanical uniformity. The universe has windows through which fresh breezes blow.

Neither can consistency be mere selection and adaptation, a perpetual climbing up the climbing wave. Mere selection would be mere yearning, the demand for further experience, the ‘prospective reference,’ the thing-in-itself, the independence of reality. It, too, is self-exhaustive.

Consistency can not be identified with either the law of habit or the law of accommodation and selection. Yet these laws do enter into the experience of consistency in important ways. Habitual acts are easy, familiar and certain, while readjustment is difficult, tentative and experimental. It is to be expected, therefore, that consistency will have a somewhat different character in the two cases. The sphere of habitual acts is the sphere of facts, established institutions and socialized inventions. The sphere of readjustment is the sphere of theories, impulses and inventions. The process of life is characterized by both habit and its reorganization, repetition and selection, rational method and empirical method, the same and the different.

The relation of habit to readjustment throws light on the frequent transitions taking place between facts and fancies. There seems to be no hard and fast line between them. Facts become fancies, and *vice versa*. Laws become hypotheses, and hypotheses laws. The speculative conceptions of one decade become the assured facts of another, and every such transformation involves readjustment and redefinition throughout the entire realm within which the transformation falls.

Such transformations are accomplished with more or less emotion and self-reference, with more or less consciousness of outstanding qualities and struggle. They exist so. Conflicts between the various factors entering into a situation demanding readjustment in order to preserve the consistency of experience, are colored, for all reflective beings, with a personal quality. If a man feels no sudden alarm, no twinge of self-pity or bitterness, no half-voluntary gathering of resources as if for war, when some cherished view is overthrown, it is quite certain that he has never embraced the view in question as an essential feature of a consistent view of things. In any other case the attack would come as a summons to reorganize, on the spot, all his intellectual habits,—a summons against which all the inertia of human nature rebels.

So long as an activity is new and untried we proceed with caution, attention and a distinct sense of risk. Herein lies much of the fascination of mountain-climbing, gambling and philosophical speculation. As activities become habitual and familiar they lose these characteristics more and more. The animosities of artists when some new style develops in literature or art pottery illustrate the point as well as the deep personal concern with which old-school politicians face new situations in government and orthodox thinkers look upon new discoveries in science and new formulations in philosophy. Consistency is a sort of tropism for forms of activity which maintain experience, and both the conservatism and the radicalism of human nature fall within it. It is too largely a feeling to be called an intuition. When we have the feeling we say 'there is truth,' or 'there is perfection.'

In all judgment much depends upon method and technique. Where they exist, tension and emotion, the concern of experience for its own maintenance, are in abeyance. When technique of judgment is wanting, conception is a process of assimilating the object to self-consciousness, a process which tends to define both the object and the self. The first conceptions of things in both philogenetic and ontogenetic development are anthropomorphic. The literature of antiquity and the lore of childhood abound in such conceptions. The keen personal concern which these assimilations show, the attitudes of fear and placation to which they give rise, are manifestations of the same psychosis. The earliest philosophers were dependent upon self-consciousness for their conceptions of the world. Indeed, wherein lies the sin of philosophical speculation in all ages if not in this lack of method and technique? Wherein lies the sin of science in all ages if not in the subjection of things sacred because of their intimate relation to self to the rubrics of an impersonal technique? Thales's quest for an *arche* marks the transition from a purely speculative to a scientific conception of reality. From Oceanus had come blessings and curses. A placid sea had meant kindness, and a stormy sea displeasure. To Oceanus men had prayed and sacrificed. Their thought of the god was a projective thought of themselves. The idea that the ocean was not a divine personage, but the *arche* of all things, invited a reconstruction of the self-consciousness of the age, a reconstruction which had to be made with difficulty and anxiety. May not the present disappearing antipathies to the higher criticism and to the scientific investigation of religious experience be other illustrations of the same mood?

Tension appears in the scientific camp whenever problems arise on the border line between two sciences and invite modifications of

the methods of both, problems such as those of astrophysics, psychophysics and so on. Such charges as 'mere speculation,' 'unscientific,' 'transcend the power of knowledge,' etc., usually precede earnest attempts to solve the problems. Socrates's humble plea that the phenomena of nature are affairs of the gods into which it is sacrilege to inquire, may have been an expression of the same emotion as the outcry of many modern thinkers when the theory of human descent by natural selection was first propounded, the same as the impatience of many scientists when the validity of the atom theory, the ether hypothesis or the laws of motion is called in question. All science was once speculative, and ceased to be so when judgment became organized and controlled by a uniform technique. There is no fixed line of demarcation between science and philosophical speculation, and this is, perhaps, one reason why attempts to define science and philosophy in terms of their content are so unsatisfactory.

The difference between science and speculation is made by the relations of their problems to the self. If a problem falls within some scientific technique it does not involve a transformation of the existing organization of the self. For a problem to fall outside all existing scientific technique means that the self is to be altered. So long as the solution of a problem is going to change the constitution of objects merely, adding a quality here and subtracting one there, the problem is scientific. So far as it involves a reorganization of the self, it is speculative.²

The same distinction is illustrated in another sphere. The earliest morality was a service of the gods. Obedience to the will of the gods, by becoming familiar and habitual, is transformed into an obligation of man to man. The local and tribal customs of the Hebrews have become the common morality of the civilized world. Baldwin holds that the religious consciousness involves an ejective sense of the expressed will of God or the gods, as well as a projective sense of the mystery and inscrutableness of the divine nature. It is the difference between the habitual and familiar, on the one hand, and the accommodative and unfamiliar, on the other. In the experience of individuals who outgrow traditional standards of moral judgment, the reorganizing process is often prolonged and painful enough, and such transformations in moral standards are usually accompanied by changes in religious belief. Religion seems, for one thing, to be reconstructive morality, just as speculation appears to be reconstructive science.

²I wish to acknowledge indebtedness to Professor Dewey for much of the phraseology of this paragraph.

Again, these two types of consistency are recognized in the sphere of purposeful judgments—judgments of beauty, utility and individuality or perfection. Habitual judgments of the beautiful are based upon examples rather than principles. They are usually characteristic of some school or some movement in art criticism. Some have the hardihood to rely upon esthetic intuition rather than example, and theirs is a purely esthetic experience, as distinct from an art experience. When judgments expressing esthetic intuition have once been socialized and become familiar, they are part of the organized body of art traditions and possess a certain authority. In purely esthetic experience, on the other hand, no model is before the mind and no act of conscious comparison or analysis leads up to the judgment. It is as if the self deepened and broadened so as to include the object, or rather, so as to transcend all difference between the object and the self. Beautiful things so fit into the knowing process as to commend and glorify both it and themselves. Beauty is the discovery of harmony between the object of knowledge and the knowing mind. We 'lose' ourselves in landscapes, and all strains of perfect music seem to rise out of the soul itself.

Similarly we welcome industrial and mechanical inventions as widening the horizon of the self. The telephone brings us nearer together and makes the world smaller. The pearl of freedom is the gain of utilitarian devices.

In perfection, means and end are one, the object is an end in itself, a thing of such comprehensiveness and internal harmony that we conceive of nothing more valuable or more real. There is the relative perfection of a thing in its kind, and also the dream of absolute perfection which constitutes our universe of reality. In this experience, also, we revise habitual points of view whenever their inherent inconsistencies become plain to us. What appeals to one age as perfect may be the merest heap of fragments to another. Perfection, like beauty and utility, is an essentially limiting concept. They define a limit at which the present struggle, the present self-conscious experience, will cease. Perfection has a different content for each organized setting of social life. Creeds change, worships alter, our admirations shift from year to year. In passing from one city to another, from one companionship to another, the things we look upon with wonder are wont to change. It is sometimes said that every reflective being dreams of realizing an experience so organized in its activities and so comprehensive in its scope as to contain no unsolvable problems, no irremediable wrongs, no defeats. It is the child's longing for a diet of bonbons. Realization is always 'disillusioning.' No one wishes perfection in general. What we

really need and confidently await, is that with all our powers at our command, and the goal before us, we may continue to hope and strive—in Browning's phrase, 'ride, ride together, forever ride.'

G. A. TAWNEY.

BELOIT COLLEGE.

THE RELATION OF FEELING AND INTEREST

INTEREST has so often been called feeling, that it seems worth while to inquire whether in a state of interest feeling is ever the predominating factor and whether interests and feelings are ever identical. In two earlier articles¹ an attempt was made to define clearly the word interest, and in discussing interest and feeling it will be necessary to state in what sense the word feeling has been used when identical with interest. Feeling is a term which has run the whole gamut of psychical experiences, so we shall not attempt anything but the briefest description of what it means to-day in the common usage of men and what it stands for in some psychological writings.

In general, feeling is regarded as the consciousness which is subjective, which belongs to the self experiencing it without the possibility of its being reproduced in another. Different times and different men have considered an experience to be feeling which later times and keener thinkers have classified as sensation, and the tendency at present is to reduce all feeling to some sort of organic sensation. Emotions are now analyzed into organic sensations, idea complexes and the simple affective elements which are sometimes called affection, simple feeling or feeling tone. But the bit of consciousness which is present when men say, 'I feel I ought to do this,' 'I feel it a pleasure,' 'I feel a real concern,' etc., is what I wish to consider in this paper; emotion will be the term employed where the organic sensations are noticeably prominent, and feeling tone for those irreducible, unanalyzable elements of consciousness which refuse to be objectified.

Let us compare for a moment the two expressions, 'I feel this to be true' and 'I know this to be true.' In the latter case we are prepared with a definite idea, which is the object, we say, of our knowing; not only this, but there is ready a number of definite ideas bearing the relation of proof to the first idea which can reenforce the first idea, making up an argument or chain of reasoning which we can give to the world about us with the conviction that they will

¹ 'The Attitude of Mind Called Interest' and 'The Psychical Complex Called an Interest,' this JOURNAL, Vol. I., No. 16, and Vol. II., No. 25.

reappear in the consciousness of other individuals in substantially the same form in which they left ours. So sure are we of this similarity of ideas that we have named them, and they are so much objective, so far as our attitude towards them is concerned, that some philosophers consider them as possessing the only reality there is. Thus the consciousness back of the expression 'I know' has the characteristics of objectivity, definiteness, a logical relation to other ideas and communicableness. It is explicit to the knowing self, and the 'I' falls into the 'Gegenüberstehen attitude,' as Lipps has called it.

On the other hand, when we say, 'I feel it is so,' we often add, 'though I can't tell why.' There are ideas present in this case as surely as in the other, and we believe our idea which we feel is true corresponds to some objective fact. This 'true' idea is not vague, and while it has connections characterized with considerable warmth with hosts of other ideas which give it a substantial foundation, no train of ideas separates itself from the rest of consciousness and allies itself with our 'true' idea as a necessary adjunct of it. We feel it is true for us because our whole consciousness is in harmony with it, but we can not deny that the same idea in another consciousness may find that it is out of harmony with the contents of this other consciousness, and hence would be felt as false. We can not set it off from the rest of our consciousness, for it is implicit in the self, and as we can not transfer our consciousness *en masse* into that of another person, we feel that it belongs to us and that it is incommunicable; hence we call it subjective, and our consciousness feeling. And so we have just the opposite characteristics to the state of knowing, namely, subjectivity, vagueness, chance relations with other ideas and incommunicableness. There does not seem to me to be any hard and fast line between the two; it is only a matter of degree, and the problem of interest is just this passing from the 'I feel' state to the 'I know' state. We seek constantly to make our vague subjective, implicit ideas, objective, definite and communicable to the other selves about us. Perhaps it is more correct to say that the problem of interest is to keep the mind alternating from one state to the other. The true student finds that no sooner has he settled a problem and put his conclusion in the objective form of common knowledge, than that perhaps this very conclusion has awakened in him the feeling that some other problem has a solution of whose truth he feels sure, but which he is impelled to prove true and make objective, and so he goes on in his eager, endless quest.

It is in this sense that Hegel uses feeling when he says,² "Feeling is the non-objective content itself and is only the lowest degree of

² "Encyclopädie der Philosophischen Wissenschaft," Introduction, p. xx.

consciousness, yet a form of the soul common to beasts." From this state follow all the higher degrees of intelligence by a gradual process until the highest state of knowing is attained. This is the 'vague consciousness from which instinctive actions spring, and to-day we in common speech call it instinctive feeling. We are all familiar with Professor James's stream-of-thought theory with its substantive and transitive parts, and it is worth while to notice that he uses the word feeling for this transitive part. For example, he says:³ "*If there be such things as feelings at all, then so surely as relations between objects exist in rerum naturâ, so surely, and more surely, do feelings exist to which these relations are known.* There is hardly a conjunction or a preposition, and hardly an adverbial phrase, syntatic form, or inflection of voice, in human speech, that does not express some shading or other of relation which we at some moment actually feel to exist between the larger objects of our thoughts." Again, he calls the psychic fringe with which objects before the mind are surrounded feeling, sometimes, indeed, an intense feeling. He endeavors to reinstate the 'vague and inarticulate to its proper place in our mental life.' This is cognitive, but it differs from the distinctly known topic or interest around which the fringe of relations plays, and so he says the relation is felt, and the particular relations usually felt are those of 'harmony and discord, of furtherance or hindrance of the topic.'

When, therefore, an idea is present in consciousness with this vague, inarticulate setting, we say we 'feel' in regard to it. In a state of interest, the interesting idea or topic is active in arousing and controlling consciousness with a view to ultimately finding those related ideas which will form a chain of reasoning and allow a new conclusion to be reached. But in the initial stages the idea seems almost swamped in this vague inarticulate fringe and mass of relations, and so the state in its origin seems to be one of feeling. If we follow it on as it rejects idea after idea from the struggling mass striving for recognition, we see the fringe disappear gradually, relations become harmonious, the accepted ideas become clear-cut, and ranging themselves on the side of the original idea, strengthen and enrich it until it seems to occupy the whole of consciousness, and feeling is entirely absent. And yet no one will say that interest was not the last state as truly as the first. It is, perhaps, no less true that the final stage of a state of interest is enveloped in feeling, for when the conclusion, the end so long sought, can be uttered in a *Eureka* phrase, the long train of ideas held rigidly in a tight grasp is released and flows harmoniously back into the vague and inartic-

³ James, 'Psychology,' pp. 162 ff.

ulate, and consciousness experiences the delightful feeling of satisfaction.

Taking feeling in this sense, we can answer our first question by saying that feeling is often the predominating factor in the initial stages of interest. To be sure, the interesting idea is the *sine quâ non*, but if it finds no response in the rest of consciousness, it dies of inanition, and so it is that the vague and inarticulate decides which ideas shall appeal to us and causes that upheaval of consciousness which characterizes a state of interest. In other words, that which we have already experienced, or that inherited experience of ours, instinct, determines what new thing shall become a part of the present experience, and it is the material out of which the interesting idea fashions that meaning or conclusion which is the purpose of our thinking. The born teacher is the one who knows what the pupil may be able to bring to bear upon any new topic, and the man of tact can foresee what effect his words will have on the minds of his hearers, and chooses accordingly.

As to the other question, are feelings and interests identical, we must answer, no. A feeling may develop into an interest, since the idea which is to lead in the quest for a chain of reasoning and its conclusion may arise from the vague sort of consciousness above described. On the other hand, feeling may develop into an emotion in which, contrary to the development of an interest to clearer intelligence, it deteriorates into a mere mass of organic sensations ending in blind impulse to action. Too often emotional feeling has been mistaken for the feeling which accompanies a true interest, and public speakers and teachers have deceived themselves by thinking that the amusement or excitement which they have succeeded in arousing is that feeling of eagerness to know more, so essential to the awakening of a genuine interest. Although emotions and interests are very far apart in their final stages, yet since they sometimes have a common origin we must inquire whether there is not a little something in common all the way along. The first tends more and more to inarticulateness, to subjectivity, to vagueness and to unreasonableness, while the latter is striving in the opposite direction, but both are alike in that they are trying to find a satisfactory conclusion, and there is a certain excitement or tension present; emotion finds its outlet in physical expression, and interest in intellectual.

Accepting in a general way Wundt's theory of feeling, do we find there is one class of feeling or a feeling tone which is the invariable accompaniment of interest? If we employ the three classifications of attention with their opposites mentioned in the first article cited above, the following scheme of accompanying

feeling and the different forms of attention including interest may be useful, though as our states of mind are rarely pure we can not expect unmixed feelings to appear often.

Involuntary attention.....	Pleasantness.
Vacuity or distraction.....	Unpleasantness.
Interest	Excitation.
Indifference	Repose.
Voluntary attention.....	Strain.
Inattention	Relaxation.

The limits of this paper forbid any elaboration of this scheme, and an appeal to one's own introspection is, of course, its best verification, but one fact in regard to excitement or excitation is of considerable importance. Interest, this article has declared, is the exact opposite of emotion, in that internal organic sensations are quite lacking. In my own experiments⁴ as well as in those of several others regarding the vaso-motor changes which take place while different feelings are present, it has been found that the vaso-motor variations are less marked during the excitement-depression classes of feelings than in any others. Thus, while one's own introspection tells one that the feeling is one of excitement, or of being keyed up for action, and while one is conscious that no organic sensations of moment are present when one is interested, we find a corroboration in this fact, that it is exactly this feeling of excitement which careful experiments show to be freest from organic or bodily disturbances.

This brief article closes a modest attempt to make the word interest stand for something more definite in psychology and pedagogy than it has hitherto done. This definition from Lipps,⁵ for example, really says very little, and yet interest is a word much used by him: "We understand under interest, when we take the word in this sense, everything which contributes to or is concerned in the activity which a psychical process brings about in me; in a word, all of the factors of the operative power, etc." The simple definition I would suggest is this: Interest is that form of attention when some one idea or train of ideas is prepotent in arousing and controlling consciousness; an interest is a train of thought having a central idea which seeks to organize relevant ideas into a logical relation to itself; interest is never to be identified with feeling, though it may take its rise in feeling as used for the vague and inarticulate consciousness, while its peculiar feeling tone, excitement, has the least emotional taint.

LUCINDA PEARL BOGGS.

URBANA, ILL.

⁴Boggs, 'The Physiological Accompaniments of Feeling,' *Psychological Review*, Vol. XI., Nos. 4-5.

⁵Lipps, 'Fühlen, Wollen und Denken,' p. 30, Leipzig, 1902.

FEELING

THERE appears to be a considerable difference of opinion as to the meaning and import of the term feeling. The writer regards this term as the most important term in the psychological vocabulary, and so an attempt will be made to make it as clear as it is here considered important.

It is here presumed that none will dispute that agreeable and unagreeable states can be recognized, at least when they reach a certain degree of intensity. And if these states in their undifferentiated form—emotional form—be considered the characteristics and the only characteristics by which feeling in its primary sense can be known, there need be no ambiguity so far. Now if the term emotion be extended so as to represent these states of agreeableness and unagreeableness in all their variations of intensity, from that vaguely conscious summation expressed sometimes as 'I feel very well,' or the reverse, up to those most intense phases termed passions, we still appear to be clear of entanglements. If we now consider these emotions abstracted from their usual intellectual accompaniments and from all objective references, we have a classification exceedingly useful in psychical analysis of an ultimate nature. For emotional states as thus understood in different degrees of intensity would seem to form the psychical background of ethics and religion, while in their more quiet workings they appear to determine all judgments, to enable us to assert knowledge of anything, and to form the criterion of truth; while they further appear not only as the positive factor in psychical, but also in organic, evolution. But to include all that should be included under the term feeling, there is a further extension necessary; that is, *images* 'are not what they seem.' We appear to gain in clearness and get nearer the truth by considering images as specialized feelings, so that the whole psychical process becomes in the last analysis a feeling process.

The ambiguity in the term feeling seems to have arisen mainly from, (1) the use of the term feeling without qualification to denote certain *specialized feelings*, the tactile feeling mainly, which feeling may be considered to have lost the primary feeling characteristics and to have acquired a number of special characteristics which may be all included under the head of *prominence*; (2) the substitution of the terms pleasure and pain, which as commonly used mean something more or something less than is or should be included in the *characteristics* of the primary feeling. In order to make this clear we will first call attention to the theory of the feelings presented by the

writer in a former number of this JOURNAL, in which it was stated 'that the whole psychical process might be considered as a feeling process consisting mainly of peculiar activities between emotional states and imagery phenomena—specialized feelings—seemingly for the purpose of establishing a maximum of agreeable states.' Now when these psychical or feeling manipulations have proceeded to such an extent that they give rise to the conception and belief in an organism in an apparently close relation to these same activities in their collectivity or to their supposed content, then agreeable states appear to arise from the normal activities of the various organs composing the organism as now conceived.

Now it is the agreeable states arising from organic activity, generally indulgence of appetite, *normal or abnormal, acting in their severalty*, that is, *with no regard to their normal associative activity with the whole organism*, to which the term pleasure is commonly applied. As many know to their sorrow, in this complicated human make-up agreeable states may up to a certain point be obtained from abuse or abnormal activity of various organs; so that, when the term pleasure is applied in philosophical discussions sometimes to represent the agreeable states arising from the collective and harmonious working of the whole, and at other times in the above restricted and more popular sense, without marking the distinction in any way, confusion is likely to result.

The unagreeable state usually termed pain seems to have undergone a still greater specialization, in having a more specific local feeling, and so is readily distinguished as connected with disease, injury or overwork of particular parts or organs. So that if the terms pleasure and pain be only used in the restrictive sense as indicated above, the general agreeable states classified under the term emotion may be better understood.

With regard to the term psychosis, this might fittingly represent the whole psychical or feeling complex considered in its *constructive* relation, involving the self and not-self as it arises in any one individual. This would leave *feeling* free to represent the undifferentiated, basic psychical *something or somewhat*.

In the opinion of the writer, the main cause of the obscurity in investigations into our own psychical nature or its constituents lies in the faulty methods of procedure; for the investigator usually conducts the investigation as if he were referring to some specimen hanging on the wall, and so far removed that few details could be observed. There then arise speculations as to the nature of these now obscure characteristics. Yet every investigator possesses a psychical laboratory within himself, and until he goes there and tries

experiments, *notes how it feels*, and then compares results, it is difficult to conceive how any progress can result.

E. A. NORRIS.

ALBANY, N. Y.

REVIEWS AND ABSTRACTS OF LITERATURE

The Life of Reason, or The Phases of Human Progress. GEORGE SANTAYANA. New York: Charles Scribner's Sons. 1906. Vol. V., *Reason in Science*, pp. ix + 320.

In the various reviews of the previous volumes of 'The Life of Reason' there has been such flattering unanimity of opinion concerning the author's scholarship, the fascinations of his style and the rich suggestiveness of his interpretations, that further comment on these features might begin to cloy.

Having discussed Professor Santayana's standpoint and the general outline of his undertaking in a review of the first four volumes of his work in No. 8 of the current volume of this JOURNAL, we may pass at once to the contents of this volume. Indeed, so concrete and all-pervasive are Professor Santayana's standpoint and method that each volume and most of the chapters may, like Emerson's paragraphs, stand alone.

Disregarding for the present what appear to the writer as certain discrepancies, some of which will be noted further on, we shall let the author's general 'intent,' to use his own term, speak.

The difference between science and myth does not lie in the fact that one is less speculative than the other, but in the fact that the speculations of science are made to be verified, while a myth is final and absolute. Further, the only kind of verification a myth could have would consist in the accidental discovery of a sense-object corresponding, point for point, with the mythical object. But, "Gravitation and natural selection, being schemes of relation, can never exist substantially and on their own account. . . . A hypothesis, being a discursive device, gains its utmost validity when its discursive value is established. It is not, it merely *applies*; and every situation in which it is found to apply is a proof of its truth. . . . To verify a theory as if it were not a method but a divination of occult existences would be to turn the theory into a myth and then to discover that what the myth pictured had, by a miracle, an actual existence" (p. 10).

Nor does this hypothetical procedure of science reduce its results to mere 'appearances' in invidious comparison with something else as reality. Such a conception of science merely convicts its possessor of the elementary mistake of first identifying reality either with the ideal, the hypothetical element, as does the transcendentalist, or with the immediate, the existential element, as does the materialist, and then regarding the other factor as a foreign, disturbing, vitiating element, with mere 'appearance' as the joint result. But we have only to keep fast hold of the

conception of reality, life as consisting of both these elements, hypotheses and the immediate sense experiences to which they lead, and of the fact that this also is just what constitutes science, in its fullest sense, to see that science gives the most adequate conception of reality—all others being abstractions from it. Thus dialectic is the abstraction of the hypothetical, as physics is of the mechanical, the existential element. "If science thus contains the sum total of our rational conviction and gives us the only picture of reality on which we should care to dwell, we have but to consult the sciences in detail to ascertain, as far as possible, what sort of a universe we live in" (p. 319).

Thus speaks Santayana, the pragmatist, the dynamic idealist or empiricist, whatever you will. But, as was pointed out in the discussion of the other volumes above referred to, we have to reckon also with Santayana, the Greek, the perfectionist. This is foreshadowed in the general division of science into physics, which deals with things and events, and dialectic, which deals with the 'forms' of things and events. And when we read (p. 209 *et passim*) that 'these forms are invulnerable, eternal and free' we surely have a confession of Platonism, pure and undefiled. This means, of course, that there is a realm or portion of reality that never undergoes any reconstruction whatever, and if Santayana the pragmatist did not step in, Santayana the Platonist would have to deal with all the old puzzles involved in relating a realm of absolute fixity to one of absolute fluidity.

It is Santayana the finalist also speaking in numerous utterances, beginning, 'When science is perfected,' 'If science were perfect,' etc., who laments the grotesque inadequacy of consciousness to represent its tremendously complex objects (p. 81) as if this very complexity itself were not already in consciousness, otherwise how should we complain of it. The development of this motive is carried so far as to say (pp. 82-83) that the inadequacy of sense-perception 'retards science and renders hypotheses necessary'! as if the author did not elsewhere most convincingly show that it is just the inadequacy of the senses that makes science possible and necessary; that hypothesis is the very soul of science; and that every development of the powers of sense-perception, *e. g.*, the microscope, the telescope, etc., instead of doing away with hypotheses, only creates a new demand for them.

This rivalry of ultimatism and evolutionism is responsible, too, for the ambiguity in the rôle of thought in science. On the one hand, thought seems to effect, to establish relationships between things. On the other, it is the mere 'product,' 'expression,' 'shadow,' 'music,' 'incense,' etc., of a world of things already and independently in relation. Now thought is the method of experience, again it simply discovers 'the method already existing in the flux of things' (p. 117). Yet again, the edges of this cleavage are so brought together as to form a real circuit in which the reaction of thought upon the things of which it is the expression is clearly recognized; in which thought not only acknowledges its 'natural' parentage, but renders some filial service. Thus, "Thought's

rational function consists, as we then perceive, in expressing a natural situation and *improving* that situation by expressing it. . . . Expression makes thought *a power in the very world* from which thought drew its being, and *renders it in some measure self-sustaining and self-assured.*"¹ Here surely no vestige remains of the Aristotelian distinction between efficient and final causes elsewhere so devotedly expounded and defended.

Of the chapters not already mentioned the reviewer finds the one on 'History' and the three on 'Prerational, Rational and Post-rational Morality,' especially stimulating. In the chapters on 'The Nature of Intent' and 'Dialectic,' which deal with logical questions, notwithstanding repeated affirmations of the natural origin of reflection, the account of its operations seems to cut it loose too much from its base. Deduction is given more independence of induction and of hypothesis (p. 97) than many will wish to allow.

But a logic-chopping type of criticism can not do Professor Santayana's work justice. For, despite the discordant note of finalism, it still remains that nowhere has the essentially *vital* character of reason been more clearly, forcefully and gracefully stated than in these volumes. Moreover, the distinctive thing in Professor Santayana's important contribution is that this character of reason has been exhibited, not in a formal and dialectic fashion, but by a scholarly appeal to the various contentual 'fields' of experience.

A. W. MOORE.

THE UNIVERSITY OF CHICAGO.

A New Interpretation of Herbart's Psychology and Educational Theory through the Philosophy of Leibniz. JOHN DAVIDSON. Edinburgh and London: Blackwood & Sons. 1906. Pp. 191.

An excellent work, growing out of discussions concerning the relation of Herbart's philosophy to his educational theory. It is not an exposition of Herbart, but an *interpretation*, as its title states. The author's style is clear and easy, but he assumes that the reader is already familiar with the subject and the work is not suited to the student who is just beginning in the field of philosophy or education.

Some writers admit the practical value of Herbart's educational theory, but deny the validity of his philosophical principles. Dr. Davidson does not believe in this separation, and he comes forward with a defense of Herbart's philosophy. His purpose may be best stated in his own words:

"That the central positions of the Herbartian pedagogy are based on Herbart's psychology and ethics, and that the latter are in turn of such a character as to meet the demands of a science and art of education, it will be our task to attempt to prove as we proceed. We entertain the hope of being able to show that the conception of 'mechanism,' applied with such condemnatory signification against the Herbartian psychology, must give place to such conceptions as 'organism' and 'function,' as

¹ P. 180. *Italics mine.*

being the real categories implied in the theory; that these categories point far more definitely than the category of 'self-activity' to that law of mental activity according to which the most highly efficient minds in any department of life work; and finally, that, instead of being at variance with or contradictory of the category of self-activity, they indicate the only way in which the self can find its highest and best realization."

The author believes that Herbart will find a better interpretation through Leibniz than through Kant, and he sets forth the philosophical principles of Leibniz as the proper point of departure for an understanding of Herbart. He holds that Herbart's theory of education is implicit in Leibniz, and he identifies the 'soul' of the former with the 'monad' of the latter. It is a mistake to think that from the Herbartian point of view education is a growth wholly *ab extra*. The 'apperceiving soul' through its 'presentative activity' constitutes a 'living reality and not a lifeless presentation mechanism' and the 'presentation' does not deny or preclude force and effort. A great deal of misunderstanding has grown out of attempts to make a distinction between presentative activity and presented content. There can be no activity without content, and soul-life consists of activity; therefore, the soul-life and the content are one. Only through abstraction can a distinction be made. This point of view makes life an organic activity and brings harmony into our conceptions of individuality and character as the outcome of 'many-sided interest.'

Dr. Davidson has given us a valuable contribution to philosophy and education, and his book deserves to be widely read. In a short chapter on 'The Fallacy of Formal Education' he attempts to make a practical application of his theories. This chapter is interesting and suggestive, though I do not see that all of his applications necessarily follow from the theory presented in the rest of the book. J. F. MESSENGER.

VIRGINIA STATE NORMAL SCHOOL.

Psychologie de l'enfant et Pédagogie expérimentale. ED. CLAPARÈDE.
Genève: H. Kündig. 1905. Pp. 76.

In an excellently written brochure M. Claparède summarizes the standpoint and methods of the more recent pedagogical tendencies taken on the individual side. That he has had nothing to say concerning the reconstruction of educational aims and processes as primarily a social need is to be regretted. The omission, consequently, leaves the impression that education is merely a process for developing and perfecting individual powers. Hence the formal and disciplinary play a larger part in M. Claparède's conception of education than is now thought to be permissible by our best instructors. These would develop the pupil's powers through their concrete use in a social medium and without immediate reference to the development of any power of itself. M. Claparède, on the contrary, runs the risk of playing into the hands of those whom he desires most to oppose by considering the individual simply as individual. Sociology should have made it clear to him that no power can be developed as merely individual.

This objection must not, however, blind us to the great merit of the essay. The author is quite clear on the point that a knowledge of psychology, and especially of child psychology, is essential to the teacher. He points out with clearness and vigor that rule-of-thumb methods are as inappropriate in education as in industry. Only adequate knowledge of the processes to be controlled permits efficient development of them, whether the processes be physical or mental. M. Claparède's introduction will serve as an excellent summary of the attitude of current pedagogy toward educational psychology. The general introduction is followed by a short but excellent chapter on the history of the psychological movement in education. This covers the most important contributions made to the subject in Europe and in America. Next in order M. Claparède presents a suggestive outline of the problems which educational psychology must face and of the methods necessary for their adequate study. The chapters upon fatigue and memory illustrate, most excellently, the author's point of view and method. Moreover, they summarize the results familiar, in more extended form, to the readers of psychological and pedagogical journals.

That M. Claparède has performed a great service to the teachers of his own country, in putting before them in simple but precise forms the view-point, problems and methods of the more recent tendencies in education, will be apparent even to a casual reader of the book. It serves, finally, to illustrate the wide-spread character of the current educational revival and the thoroughgoing exchange of intellectual commodities the world over, to the mutual advantage of all. S. F. MACLENNAN.

OBERLIN COLLEGE.

JOURNALS AND NEW BOOKS

REVUE PHILOSOPHIQUE. May, 1906. *La sociologie abstraite et ses divisions* (pp. 457-471): A. NAVILLE. - Sociology is the science which seeks for the natural laws of the relations of men to one another; it is not normative, hence must get away from ethics and jurisprudence. The divisions of sociology are determined, not by types of individual desires, but by types of intra-individual relations; only such relations as are willed by at least one of the parties are social. Six types of such relations are found: cooperation, exchange, charity, spoliation, authority and communicative systems. *Qu'est-ce qu'une passion?* (pp. 472-497): TH. RIBOT. - Passions are, in the field of affections, what fixed ideas are in the field of cognition. There are three characteristics of passion; fixed idea, stability and intensity. As distinguished from emotions, true passions involve logical processes, such as construction of plans, justification of conduct, etc.; and while emotions represent a suddenly disturbed equilibrium, passions are prolonged, intellectualized feelings. *L'intellectualisme et la théorie physiologie des émotions* (pp. 498-519): M. MAUXION. - Intellectualism can accept the James-Lange theory, but this latter can not

account for many emotions which an intellectualistic theory can. Emotions involve both sensations of motor reactions and also a series of images; harmony of these images is just as essential as coordination of reaction movements. Esthetic pleasures are based upon the mere activity resulting from a play of images which conflict simply as images. *Contribution du Soufisme à l'étude du mysticisme universel* (pp. 520-525): PROBST-BIRABEN. — Mohammedan mysticism is commonly pantheistic and subjectivistic, hence heterodox. A plea is made for closer study of non-Christian mysticism. *Observations et documents: Sur le rôle de la tête dans la perception de l'espace* (pp. 526-529): B. BOURDON. — *Analyses et comptes rendus*: Felix le Dantec, *Introduction à la pathologie générale*: ETIENNE BURNET. Seillère, *La philosophie de l'impérialisme*: L. ARRÉAT. Arnold, *Scientific Fact and Metaphysical Reality*: C. BOS. Binet, *L'année psychologique*: B. BOURDON. Titchener, *Experimental Psychology: II., Quantitative Experiments*: B. BOURDON. Levinstein, *Kinderzeichnungen*: G. H. LUQUET. Mercante, *Cultivo y desarrollo de la aptitud matemática del niño*: J. PÉRÈS. Crawford, *The Philosophy of F. H. Jacobi*: L. HEYNACHER, *Goethes Philosophie aus seinen Werken*: CHARLES LALO. *Revue des périodiques étrangers*.

ZEITSCHRIFT FÜR PSYCHOLOGIE UND PHYSIOLOGIE DER SINNESORGANE. Bd. 41, Heft 2 u. 3. 1 ABTEILUNG. ZEITSCHRIFT FÜR PSYCHOLOGIE. *Untersuchungen über Psychische Hemmung* (Fourth Article. Conclusion) (pp. 89-117): T. HEYMANS. — Experiments on light stimuli. Mathematical formulæ expressing results, and their general interpretation. Conclusion. *Merkfähigkeit, Gedächtniss und Assoziation* (pp. 117-144): KURT GOLDSTEIN. — A contribution to the psychology of memory and association upon the basis of investigations on the feeble-minded. Associative power of observation stands in direct relation to the mechanism of association; but impressibility is independent of this, and may subsist in the inverse relation with the above to general intellectual power. In acquired idiocy power of recognition may be preserved while that of observation is lost; the reverse tends to be the case in the congenital group. *Wie rahmen wie unsere Bilder ein?* (pp. 145-163): MAX FORH. — An experimental investigation of the esthetics of picture-framing. The frame should by its color remind us of what we should see in the neighborhood of the picture, provided we saw it in reality. *Die Quarte als Zusammenklang* (pp. 164-174): RICHARD HOHENEMSER. — A study of its physical qualities from the standpoint of the definition of the overtone and a historical review of the subject.

Fichte, J. G. *The Vocation of Man*. Translated by William Smith, LL.D., with an introduction by E. Ritchie, Ph.D. Chicago: The Open Court Publishing Co. 1906. Pp. xii + 178.

Powell, E. E. *Spinoza and Religion*. A study of Spinoza's metaphysics and of his particular utterances in regard to religion, with a view to determining the significance of his thought for religion and incidentally his personal attitude toward it. Chicago: The Open Court Publishing Co. 1906. Pp. xii + 344.

- Studies in Philosophy and Psychology.* By former students of Charles Edward Garman in commemoration of twenty-five years of service as teacher of philosophy in Amherst College. Boston: Houghton, Mifflin & Co. 1906. Pp. xxiv + 411. \$2.00 net.
- Sturt, Henry. *Idola Theatri.* A criticism of Oxford thought and thinkers from the standpoint of personal idealism. New York: The Macmillan Co. 1906. Pp. xvii + 344.
- Woods, J. H. *Practice and Science of Religion.* A study of method in comparative religion. New York: Longmans, Green & Co. 1906. Pp. x + 123. \$0.80 net.

NOTES AND NEWS

THE Macmillan Company announce *Idola Theatri*, by Henry Sturt, being a criticism of Oxford metaphysics. The *Nation* for July 26 has a review that is entertaining and appreciative, containing, among other things, the following:

In philosophic matters, the Oxford 'theatre' is one of the oldest, largest and most noted in the world. And so, though it does not always possess the best actors nor produce the most stirring pieces, it can not but be interesting to watch its performances and to make the acquaintance of its chief performers. For the past thirty years, the Oxford play called 'absolute idealism' has occupied its boards, and Mr. Sturt has set himself to explain, and perhaps to explode, its vogue. He takes his task very seriously, and does his work very thoroughly. He shows us everything behind the scenes, with the most pleasing zeal—the green room, the adapters of plays, the prompters, the properties in all their hollowness, nay, the very rouge-pots. . . . There is, however, one secret motive vital to the understanding of the philosophic situation in Oxford which Mr. Sturt has not dragged quite out into the daylight, and that is the theological. German idealism, as Mark Pattison was wont to point out, was originally imported into Oxford in the interests of obscurantist clericalism, as an antidote to the wave of naturalism, which swept over England in consequence of the great scientific movement of the nineteenth century. Kantian 'categories' and Hegelian dialectics had indisputable advantages in combating science, in that they disported themselves on treacherous ground unfamiliar and unintelligible to the ordinary scientific worker, on which he blundered and stumbled and could easily be afflicted with a show of defeat. And indirectly also this fashion of philosophizing could serve as a protection to theology, in that it might drive the human mind to admit intrinsic difficulties and mysteries in its secular thought, compared with which those of the Athanasian Creed paled into insignificance. . . . In what direction, then, shall Oxford look? There are many signs that her next fashion will be Transatlantic. The philosophic movement known as 'Pragmatism,' which is by far the most important and original contribution of America to the history of thought, has already taken as strong root in Oxford as anywhere in Europe. Nay, it has already bettered its name by there calling itself 'Humanism.' And even if 'Anglo-Hegelianism' should continue to linger in the cloistered seclusion of Oxford, this would only show once more that Oxford was still content to play the rôle of a home for lost causes.

AN expedition has been sent by the Peabody Museum of Archeology of Harvard University to northern New York to explore an ancient Iroquois site, in continuation of the work of the past two years in that state. Mr. M. R. Harrington, of Columbia University, who received his archeological training under Professor Putnam, will be in charge of the expedition. Mr. Irwin Hayden, a graduate student in the division of anthropology, will be Mr. Harrington's assistant. Mr. Ernest Volk will be engaged for a portion of this season to continue the investigations relating to the antiquity of man in the Delaware Valley, where a careful examination will be made of the glacial deposits near Trenton, N. J. For the past seventeen years Mr. Volk has been associated with Professor Putnam in carrying on this research.

STUDENTS of physiological psychology may be interested in a paper by Mr. Arles Hrdlicka in the *Proceedings of the U. S. National Museum* (XXX, p. 245) on the preservation of brains. The best preservative mixture appears to be one of formalin, water and 95 per cent. alcohol; formalin 3 parts, distilled water 45-25 parts, alcohol 52-75 parts; less water and more alcohol being used for the larger sized brains.

AMONG the effects of the late Dr. C. L. Herrick is the remainder of an edition of Lotze's 'Outlines of Psychology,' translated and privately printed by Dr. Herrick himself in 1885. The administration of his estate, wishing to have these volumes placed where they will be of service to others, will send them gratis as long as they last to all applicants who will enclose ten cents for postage. Address C. Judson Herrick, Granville, Ohio.

A NATIONAL ACADEMY OF SCIENCES has been established in Japan. It will contain forty members of whom fifteen are to be nominated by the government, and twenty-five elected.

LOUIS M. TERMAN, Ph.D. (Clark, 1905), principal of the San Bernardino High School, California, has been appointed professor of pedagogy at the State Normal College at Los Angeles.

PROFESSOR NOAH K. DAVIS, who is now seventy-six years of age, has retired from the active duties of the chair of moral philosophy in the University of Virginia.

DR. C. S. MYERS has been appointed professor of psychology (including experimental psychology) at King's College, London.

DR. ERNST MACH, of Vienna, has been awarded the Bavarian Maximilian order for science and art.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

IDEALISM AND THE DISSOCIATION OF PERSONALITY

AMONG the major difficulties which idealistic monism encounters in its attempts to conceive the whole world as immanent in a universal mind, must be reckoned (1) what may be called the *imperviousness* of minds, which seem capable of communicating with each other only by elaborate codes of signalling and the employment of material machinery, and (2) the very unsatisfactory character of the relations between the subordinate minds which are supposed to be included in the same universal consciousness. There appears, indeed, to exist a very great contrast between the internal contents of the alleged universal mind and the contents of a typically sane human mind. In a sane human mind the contents of its consciousness exist harmoniously together; they are not independent of, nor hostile to, each other; they succeed or even supplant each other without a pang, in a rational and agreeable way; even where there is what is metaphorically called a mental 'struggle,' the process is not painful to the contents, but if to any one, to the mind as a whole which feels the struggle and the distress. If, on the other hand, we conceive ourselves as thoughts of a universal mind, what a chaos we must think that mind to be! How strangely dissevered into units which seem independent and shut up in themselves! How strange that each of its thoughts should fight for its own hand with so little regard for the rest, and fight so furiously! How strange, in short, upon this hypothesis that the world should appear as it does to us!

On the face of the apparent facts, therefore, it can not be denied that the assertions of idealistic monism are not plausible. The world on the face of it looks like the outcome of a rough-and-tumble tussle between a plurality of constituents, like a coming together and battle-ground of a heterogeneous multitude of beings. It seems, in a word, essentially pluralistic in character. And if, nevertheless, we insist on forcing on it a monistic interpretation, does it not seem as though that monism could only be carried through on the lowest plane, on which existences really seem to be continuous, viz., as ex-

tended bodies in space? In other words, must not our monism be materialistic rather than idealistic? The ideal union of existences in an all-embracing mind seems a sheer craving which no amount of dialectical ingenuity can assimilate to the facts, and no metaphysic can *a priori* bridge the gulf between them and this demand.

There are, however, so many to whom the idealistic form of monism forms a faith which satisfies their spiritual needs that it should be doing them a real service to aid them in thinking out their fundamental conception more clearly than they have themselves hitherto succeeded in doing: and so it will not, I trust, be thought impertinent, even in one who does not share their view, to point out that there is much more to be said in favor of idealistic monism than its advocates appear as yet to have discovered. The fact, however, is that if only idealists will consent to appeal to experience and empirical evidence, modern psychology puts at their disposal analogies which can remove most of the difficulties which embarrass them.

I. The imperviousness and mutual exclusiveness of individual minds may be conceived and explained by an extended use of the conception of the threshold of consciousness. It is, of course, well known that this is variable, that, *e. g.*, the raising of the *limen* which accompanies intense mental concentration thrusts into subconsciousness a multitude of processes which normally are conscious. On the other hand, much that normally goes on in the organism without consciousness, or full consciousness, may become conscious by an abnormal lowering of the threshold. There is nothing absurd, therefore, in the idea that we might become conscious again of every function of the body, say, of the circulation of the blood, of the growth of every hair, of the life of every cell. Indeed, the only reason that seems to explain why we are not now so conscious would seem to be that no useful end would be served thereby, and that it is teleologically necessary to restrict consciousness to those processes which can not yet be handed over with impunity and advantage to a material mechanism.

Now it is clearly quite easy to push this conception one step further, and to conceive individual minds as arising from the raising of the threshold in a larger mind, in which, though apparently disconnected, they would really all be continuously connected below the *limen*, so that on lowering it their continuity would again display itself, and mental processes could pass directly from one mind to another. Particular minds, therefore, would be separate and cut off from each other only in their visible or supraliminal parts, much as a row of islands may really be the tops of a submerged mountain chain, and would become continuous if the water-level were suffi-

ciently lowered. Or to use a more dynamic analogue, they might be likened to the pseudopodia which an amoeba puts forth and withdraws in the course of its vital function. Empirically this subliminal unity of mind might be expected to show itself in the direct transmission of ideas from one mind to another, of ideas, moreover, that would spring up casually, mysteriously and vaguely in a mind in which they do not seem to originate. Now this is on the whole the character of the alleged phenomena of 'telepathy,' and if idealistic monists really want to convince men of the plausibility of their ideas they could adopt no more effective policy than that of establishing the reality of telepathy on an irrefragable basis.

Abnormal psychology, moreover, yields further enlightenments. No one can read Dr. Morton Prince's fascinating book on the 'Dissociation of a Personality' without being dazzled by the light thrown on the nature of personality by the tribulations of the 'Beauchamp' family. Here were, B. I., 'the Saint'; B. III., 'Sally'; and B. IV., 'the Idiot' (not to mention the minor characters), all apparently complete beings with expressions, beliefs, tastes, preferences, etc., of their own, so diverse and distinctive that no one who had once discriminated them could doubt which of them was at any time manifesting through the organism they shared in common. And yet they were all included in a larger self, which was sometimes aware of them, and through which knowledge occasionally passed from one to the other. 'The Saint' and 'the Idiot' were shown to be nothing but products of the dissociation of 'the original Miss Beauchamp,' who, when she was recalled into existence by the astute manipulations of Dr. Prince and put together again, remembered the careers of both and recognized them as morbid states of herself. In the relations between 'Sally' and 'the real Miss Beauchamp' the common ground lay apparently still deeper, and the restoration of the latter did not mean the reabsorption of the former, but only her suppression; still it may fairly be assumed that their common relation to the same body must indicate the existence of a plane on which (if it could be reached) 'Sally' and 'the real Miss Beauchamp' would be unified, and would coalesce into a single being. It was thereby shown that a large amount of superficial diversity and dissociation might coexist with a substantial unity beneath the surface. The several 'Miss Beauchamps' were to all appearance independent personages, variously cognitive of each other, hating, loving, despising, pitying, fearing, fighting each other, capable of combining together or opposing each other, and so enjoying their troubled life that most of them were determined to maintain their existence and resented the restoration of 'the real Miss Beauchamp' as their own extinction.

The amusing history of their contentions reads very much like that of a very disorderly girls' school, and we can hardly flatter ourselves that the case is too abnormal to have any application to ourselves, when we see that our normal life plainly exhibits the beginnings of similar dissociations of personality in us, *e. g.*, in dreams.

The great philosophic lesson of the case is, however, this, that the unity of a common substance only constitutes a very partial and imperfect community of interests, and is no sort of guarantee of harmony in the operations and aspirations of the personalities that possess it.

II. If now we apply this lesson to the universe, it is clear that we have only to multiply indefinitely the phenomena presented by this remarkable case to get an exact representation of the cosmic situation as conceived by idealistic monism. On this theory all existences would be secondary personalities of the one absolute, differing infinitely in their contents, character and capacity, and capable of coexistence and concurrent manifestation to a much greater extent than were the members of the Beauchamp family, in which this power was possessed only by 'Sally.' We should accordingly all be the 'Idiots, 'Saints' and 'Sallies' of the universal Beauchamp family which had been engendered by the 'dissociation' of the absolute. This might not be altogether pleasing to all of us (especially to those who, like the writer, would seem to have been predestined to be among the 'Sallies' of the absolute); but the idea itself would be quite conceivable and free from theoretical objection.

Indeed, it would throw light upon a number of theoretic problems. If discordance of contents is no bar to unity of substance, the extraordinary jumble of conflicting existences, which the world appears to exhibit, would become intelligible, and would cease to be a cogent argument in favor of pluralism. The disappearance, again, of personalities at death might merely portend that they were temporarily driven off the scene like 'B. I.' or 'B. IV.,' when the other, or 'Sally,' controlled the organism, 'dead,' that is, in the sense of unaware of what was going on and unable to manifest, but yet capable of reappearing and resuming the thread of their interrupted life after 'losing time.' And so support might here be found for the doctrines of palingenesis and of a cyclic recurrence of events in an unchanging absolute.

Again, it would become possible to explain the nature and to define the date of 'creation' better than hitherto. The 'creation of the world' would mean essentially the great event of the 'dissociation' of the original 'one' into a 'many,' and would be comparable with the catastrophe which broke up 'the original Miss Beauchamp'

in 1893. In the absolute's case the date itself could not, of course, be fixed with such precision, but the date of the creation (or, perhaps, rather 'emanation') of the world might be defined as the date at which its present 'dissociation' set in. This change itself it would hardly be possible, and would certainly not be necessary, to regard as an intelligible event. For we should be absolved from the duty of trying to explain it by the fact that *ex hypothesi* it was the dissociation of the rational repose of the one.

As regards that one again, some very pretty problems would arise, *e. g.*, as to whether it continued to exist subliminally, able and willing to recover its unity and to reabsorb the world, or whether its existence was really suspended, pending the restoration of its unity and the reabsorption of the many, or whether its 'dissociation' into a plurality of related beings was to be regarded as a final and irreparable act entailing the permanence of the plural world thus generated. The last alternative no doubt would be that most directly indicated by the analogy of the 'Beauchamp' case. For Miss Beauchamp could hardly have recovered her unity without the intervention (from the outside) of Dr. Morton Prince. But in the world's case nothing analogous would seem to be conceivable. As by definition the absolute is the totality of things, it can never be exposed to outside stimulation, and therefore can not, it would seem, reunite itself under curative suggestions from without.

The same conclusion results from a comparison of this conception of the relation of the one and the many with the very interesting anticipation of it which may be found in Mainländer's 'Philosophie der Erlösung.' Mainländer very acutely pointed out that in order to explain the unity of the universe it was quite superfluous to assume a still existing one. It was quite enough to ascribe to the many a common origin, a common descent from the one. Being a pessimist, he further suggested, therefore, that the one had committed suicide, and by so doing dissolved itself into a many, who, sharing in its original impulse, were also slowly dying out, so that the aimless misery of existence would in the end be terminated by a universal death. By substituting, however, the notion of a 'dissociation' of the one for that of its 'suicide,' it is possible not only to adduce a definite psychological analogy but also to render the process more intelligible and to safeguard the continuance of the world. Altogether, therefore, the vexed problem of the one and the many, the puzzle of how to conceive the reality of either without implicitly negating that of the other, seems to be brought several steps nearer to an intelligible solution by these empirical analogies.

Not that, of course, these conceptions would entail no drawbacks.

It is a little startling, *e. g.*, to have to think of the absolute as morbidly dissociated, or even as downright mad. But a really resolute monist would not allow himself to be staggered by such inferences. For (1) the objection to a mad absolute is only an ethical prejudice. And he would have read Mr. Bradley to little purpose,¹ if he had not learnt that ethical prejudices go for very little in the realm of high metaphysics, that the moral point of view must not be made absolute, and that to make it so would be the death of the metaphysic of the absolute. The fact, therefore, that to our human thinking a dissociated absolute would be mad, would only prove the limitations of our finite intelligence and should not derogate from its infinite perfection. Moreover, (2) if the absolute is to include the whole of a world which contains madness, it is clear that, anyhow, it must, in a sense, be mad. The appearance, that is, which is judged by us to be madness must be essential to the absolute's perfection. All that the analogy suggested does is to ascribe a somewhat higher degree of reality to the madness in the absolute.

Less stalwart monists no doubt may be a little dismayed by these implications of their creed, and even disposed to develop scruples as to whether, when pursued into details, its superiority over pluralism is quite so pronounced as they had imagined; but in metaphysics at least we must never scruple to be consistent, nor timorously hesitate to follow an argument whithersoever it leads. It must, therefore, be insisted on that idealistic monism is a perfectly thinkable, if not exactly an alluring, theory. Hence even a disbeliever in it may display a certain intellectual sympathy with it by helping to work out its real meaning more clearly than its advocates have hitherto succeeded in doing, or the public in understanding.

F. C. S. SCHILLER.

CORPUS CHRISTI COLLEGE, OXFORD.

THE GENESIS OF IDEALS

I

THE ideal too frequently in discussion is an *ignis fatuus*.¹ The reason for this is that, being a complex idea which, through repetition, has become familiar to ear and tongue, we mistake this familiarity for intelligent understanding, and presuppose a common

¹ See 'Appearance and Reality,' Ch. 25.

¹ If in this paper we speak more frequently with reference to moral ideals, it is because these are most frequently called in question, not because the position for which we argue would fail of illustration in other departments where ideals are functional.

meaning where, in fact, we have little more than incompatible sense experiences, fused with vague emotional reactions which color the discourse as long as it continues. So little, as a rule, do we demand of ourselves in the way of clear and distinct ideas when we are concerned with the problem of life! It is only a particular application of the same presumption that we know without inquiring, that we find illustrated, in regard to this same class of problems, by two characteristic attitudes that, for convenience, we may call, respectively, the naturalistic and the theological.² With both it is a question of *where* the ideal is to be affirmed; neither raises the previous question of *what* an ideal is. With the one, the ideal has an objective character, an existence outside the individual consciousness, to which the individual consciousness may progressively approach, but which it may not comprehend. To know it, to bring it within terms of a scientific definition, according to this view, would endanger its ideal character and destroy its value as a moral force. With the other, the ideal must find its place within the experience of those in whom it is operative, but then it is no longer an ideal, but just a bit of the common experience of common men. On this view, the only improvement is self-improvement. Between these two accounts we are left to face a dilemma somewhat significant of the moral situation of the day. For if the ideal is objective, in the sense acknowledged by both, it is incapable of affecting the life of men; if it is subjective, it is no longer an ideal. The naturalistic and the theological interpretations cancel each other, for, according to the former, the organizing factor of life may be moral, but it is not ideal; according to the latter, it is ideal, but can not be moral.

The method that underlies each of these views, however different their standpoints, is the same. Each undertakes to construe life from an abstract point of departure; the one taking it as a series of facts to be described, the other regarding it as a plastic continuum to be moulded and shaped. Neither of these attitudes is adequate. Life is not a series of facts any more than a series of impressions. It is, in some sense, both. Hence when we come to consider the subject of ideals, we find that, to do justice to each of the views referred to, we are driven to the concrete facts of experience, to life as it manifests itself in the complex relationships defined by our intercourse with one another in the various interests of the family, the business, the society, etc.³ But the recognition of this

² With the distinction suggested in this paragraph may be compared Baldwin's 'Autonomy' and 'Heteronomy' ('Social and Ethical Interpretations,' pp. 251, 252).

³ This statement is intended to apply to both the theoretical and the practical interests, in each of which advancement is marked by the ability to give

implies more than a compromise between the naturalistic and the theological attitudes of mind; it requires the substitution of a scientific⁴ temper and method, and a reconstruction of the problem itself. Only a careful and exact study of the facts of life can solve the questions that life itself suggests. We are led, consequently, to a consideration of the relationships in and through which the ideal both is and undergoes development. These relationships are, of course, those that are designated, broadly, as social. An accurate social psychology must underlie any adequate philosophy of the social relations.

II

We have pointed out in another connection that imitation is the instrument, *par excellence*, of social organization.⁵ This, we maintained, is true whether we have regard to the conformities or to the variations that are characteristic of every normal social group. Through it *both* conservation *and* development are brought about. We revert to the position here because it is opposed, in some of its features, to the view of Baldwin, and because it is fundamental to the exposition of the concept of the ideal. To refer briefly to Baldwin's statement, he holds that 'the reign of imitative feeling and impulse, whether it be by instinct or by suggestion, would make possible only the form of organization in which fixed habit is all, and in which no accommodation, movement, progress, would take place.'⁶ That imitation works, by instinct and by suggestion, toward the fixation of habit, there is no reason to dispute, but that it does *only* this, especially when the statement is taken to exclude 'accommodation,' may be regarded an open question. Unless there were adaptation to another or others within the social organization, that is, without 'accommodation,' there would be nothing corresponding to what, in the place referred to, we have called 'conformity,' and what Baldwin means by 'fixed habit.' By habit as a social phenomenon must be understood the common modes of behavior which have or have acquired the standing of conventions. Every society is directly interested in maintaining a conventional morality—if, indeed, this not a pleonasm—and, therefore, in putting a premium on certain habits. Accommodation, consequently, must be looked upon as tending to the the data under consideration an ideal reconstruction. In the broadest sense, the entire history of human progress lies at the foundation of the science of the ideal.

⁴ The term 'scientific,' as used here, is intentionally broader than the term 'naturalistic.' It is an interesting *petitio principii* that makes them synonymous.

⁵ This JOURNAL, Vol. III., p. 405 ff.

⁶ 'Social and Ethical Interpretations,' p. 489.

permanency of the social group through the emphasis it gives to a selected set of motor reactions.

But this should not be taken to mean that accommodation leaves no room within the group for variety and change. It may be, as Baldwin holds, that the term covers a broader range of fact in which difference is a characteristic feature. Social situations are never—or rarely—simple, and require, for their practical solution, modifications of the conventional forms of behavior. We have to learn, as we say, to accommodate ourselves to new conditions. And they are, of course, the novel situations that emphasize the limitations of imitation. But the fact to be noted is that there are no novel situations, any more than there are conventional ones, which are only and wholly resolvable on the basis of imitation.⁷ The repetition of old relations without points of novelty, and the presentation of new ones without points of similarity, are equally incapable of arousing psychological attitudes of any *social* significance. In the former case, we should have such a complete mechanization of the required reactions that their social value for the subject himself would be reduced to zero; in the other, a complete arrest of mental movement. But of the two conditions, the latter is the more vitally important. For here we have theoretically the situation of any given subject at the beginning of his psychophysiological existence. He is, in view of the undiscovered social world around him, merely a potentiality; but a potentiality in this sense is more dynamically momentous than an actualized mind which has exhausted the possibilities, either in whole or in part, of life. The first reaction of such a subject can not be called imitative, however near to or far from those actions it may be which, for sufficient reason, deserve that name. It can not be on Baldwin's theory, because 'thoughts' are the proper material of social organization;⁸ it can not be on our own, because imitation is always a reproductive affair.⁹ But if imitation is to work in the interests of social organization by its incorporation of thought material, it may be well to ask how, if not through the development of the imitative process, the subject comes to think at all. Either, it would seem, imitation is the instrument of both difference and likeness, or the subject from the start must be capable of thought. In the one case, you have an explanation; in the other, you have none.

The discussion up to this point has served to emphasize the importance of difference in social life, and to raise the question whether we need a new principle, other than imitation, to account for this feature of organized society. The problem is, must we assume

⁷ Compare what was said on the limitation of imitation in our former paper.

⁸ *Op. cit.*, p. 487.

⁹ This JOURNAL, Vol. III., p. 404.

'thought,' because we need it in explanation of the facts, or is not 'thought' itself a product of the essentially social character of mental evolution? In support of the latter view, we shall indicate how, as it seems to us, the process of social differentiation, conceivably, may take place, and, at the same time, maintain that it is, genetically, through the conflict of feeling-impulses that thought gets its specific determination.

The primary problem for every subject, from the social point of view, may be said to consist in the acquisition of ability to live in harmony with every other subject within the limits set by the group which is alike the source of the life of each. This tendency to conformity may be looked at in two ways. Either, it is the impulse to do what others do; or, it is the impulse to do what others do in like circumstances. In the former case, we have an example of unimpeded suggestibility; in the latter, suggestibility is working under limitations. Mob action, according to Baldwin, is a typical instance of the first.¹⁰ The illustration, we think, is unfortunate. We are not concerned in this place with the author's theory of mob action. What, rather, we wish to indicate is that, granting the inflammable suggestibility of the crowd, the important consideration for social psychology is a statement of the conditions under which the entire set of organized social sanctions which determine the normal life of societies become, suddenly or the reverse, inoperative, and give rise to a situation in which there is abnormal homogeneity of function. We can understand why Baldwin, with this illustration in mind, should find it impossible, on the basis of unimpeded suggestibility, to account for that differentiation which characterizes social life, and should have recourse to 'thought' as the principle he requires. But *collective* irrationality is not a normal condition, although individual irrationality, as perhaps mob action sufficiently testifies, is. It does not follow, therefore, that because you can not find in imitation, as this principle is illustrated in the mob, a principle of differentiation, that it is not to be found in the same principle as it operates under the usual conditions that surround the human infant. In the case of children suggestibility of the type under consideration is a normal condition. For who has not seen the child leave off doing one thing after another because his associates, or those who occupied with him the same social situation, were doing these several different things? The importance of this will be illustrated below. For the present it is sufficient to state that, from the genetic standpoint, unimpeded suggestibility or instinctive imitation is an elementary condition of social organization, and it does not differ except in regard to the

¹⁰ *Op. cit.*, p. 235 ff.

number and complexity of the factors and relations involved from all other forms of suggestion or imitation whatsoever. How imitation is brought under limitations, and thus a higher, more rational form of activity is made possible, we shall endeavor to show, in part, in the next section.

III

Turning now to a consideration of social growth which, as we hold, requires the presence of ideal factors tending to modify the social structure through individual action, we may mention two typical stages of the way ideals are evolved in and through the increasing complexity of the relations involved in the social experience of the race. In the first, we are concerned wholly with the single group; in the second, with contrasts between groups. In regard to the former, the most characteristic thing is the points of varying emphasis which the social environment comes to have for the single subject. We may make this statement more explicit by referring to the fact that while the group as a whole maintains itself with relative consistency, the relationships between one member and another, as these are determined by the group as a whole, are seldom identical and constantly changing. It is a thing to be remarked concerning the human family that we are born into a society which because of its complexity not only permits, but favors an indefinite variety of behavior. There are forms of social organization, for example, the state, which are comparatively simple, and where the relations sustained are not of the problematical nature of those which are defined by the home. From the standpoint of genetic psychology, it is significant that the home presents the freest opportunity for the exercise of the motive tendencies of the child. It is not merely that the child needs a field for the expression of his congenital tendencies through which he comes to be aware of his likeness to others, but also that through his own self-activity others come to be defined in terms of his subjective satisfactions. The environment receives emphatic significance at those points which are connected with the painful and pleasurable flow of the subject's conscious life. The variety of the experience which the complexity of the home makes possible is important, not mainly because of its variety, but because variety is a condition which most surely mediates those conflicts out of which the distinctively ideal qualities are developed. It is the most efficient moral force because, through the number and character of the relations it involves, it is the direct means of generating within the consciousness of each of its members a number of conflicting impulses through the resolution of which each one gains for himself a 'soul.'

The bearing of these statements upon the problem of the ideal may be made clear by an illustration. The child, we will say, has learned to behave in definite ways under the recurrent conditions of his life: he is bathed, eats, plays, sleeps, etc. These are his mechanized habits; they are, as such, the results of unhindered imitation. There is here no question of ideal factors. The imitation that is the foundation of this relatively simple existence must be brought under some sort of limitation before any higher development can take place. This may, conceivably, be brought about when some other person than the one who customarily performs that service for the child undertakes, let us say, to put him to bed. Then he is 'naughty': he cries, kicks, fights, etc. The whole experience is important for the child, however disagreeable it may be for the innocent (*sic*) cause of it all. Translated into terms of social psychology, the child is the subject of two conflicting courses of feeling leading out to incompatible lines of action which inhibit each other. The inhibition operates to heighten the feeling-impulses which, after awhile, break bounds and overflow in any available motor channels. To specify more definitely, there is, as we conceive it, a contrast between a presented content *B*—the person who is doing the unusual thing—and a represented content *a*—the person who usually does what is now being done—mediated through the act of undressing, etc.—*xyz*. What is getting done—*xyz*—calls up the image of *A*—*a*—which fails to get verified in the child's experience through the presence of *B*. Or, to put it another way, and at the same time to emphasize another aspect of the case, *B* arouses the expectation *pqr* which fails to get realized through the substitution of *xyz*. But *xyz* calls up *a*, and thereby throws into conflict, by the meaning each has come to have in experience, two previously emphasized points of the environment *A* and *B*. These, as we understand, are the conditions under which on the basis of imitation both intellectual and moral development normally takes place. Intellectually, the problem means that the judgments of value, *B* is *pqr* and *A* is *xyz*, must give place to a higher synthesis through which *pqr* and *xyz* may both serve as predicates qualifying the same subject *B*. Morally, the same situation may be interpreted as one of allowing, through growth in mental faculty, an ideal element—*a*—to serve as a reconstructive factor in behavior in the given relation *B*—*pqr*.

We have the same general situation when, instead of the relatively changing attributes which may serve as qualifications of a given object, we consider the relations which, in the nature of the case, are not interchangeable. The characteristic feature of the home more narrowly conceived is that it is the center of a system of

relations that in their nature involve the principle of identity-difference which, as we have remarked, is the principle of intellectual and moral growth. To the same extent, this is not true of any other social group. The fundamental relationships that are defined by the home are always *correlatives*. Hence, parent-child, brother (sister)-brother (sister), uncle (aunt)-nephew (niece), etc. Each of these pairs of terms may, of course, be read the other way; each term of the relation implies the other. But the parent-child relation is determinative throughout. An identity of blood relationship underlies all the differences mediated by the home. Now these obvious facts condition not only what each member of the family—whether we take a narrower or broader view of the term—may do, but also, as we saw in the other case, what it is possible for each one to think. Thinking, that is to say, is determined for all members of the family by the particular relationship which for the time being is operative. But, as we saw above, every other term is potentially functional at the same time, and at any moment may become operative—ideally—in modifying the customary behavior in any given relation. This is seen even in so fundamental a relation as that between parent and child. This relation is interpreted aright only when it stands for authority on the one side and obedience on the other. The brother (sister)-brother (sister) relation, and every other relation based on more remote kinship, place their subjects more nearly on a footing of equality. The give-and-take in these cases is not nearly so well prescribed as in the parent-child relation. In the latter, restrictions as to behavior are obvious, whatever their sanctions or methods of enforcement. We thus have two general groups within the one family life which play back and forth on one another in the consciousness of the child, and which, through the process of adjustment, secure the intellectual and moral development of their subject. The relative freedom of the one tends to limit the necessity of the other until, through the discipline of experience and the growth in intellectual discernment, the parent-child relation, as we started with it, is changed into the best type of human companionship. But all this comes about through actual relationships operating in an ideal way to modify the permanent relationship on which the home is founded.¹¹

After what has been said, few words will suffice to show that education through ideals, already begun within the home, is continued, on similar lines, when the home is no longer the only sphere

¹¹ It is hardly necessary to say that the influence works in the other direction as well. Thus, the parent-child relation in respect to the other relations prevents equality degenerating into contempt by securing mutual respect.

for the exercise of one's activity. Instead now of the different values that come to be attached to the several parts of the same environment, we have different groups, qua groups, arousing conscious conflicts which, as we have seen, is the general condition of the growth of their subject in intellectual and moral ability. The point of importance, therefore, is to see how there come to be differentiated groups which may act in an ideal way in the interests of a freer life. Genetically considered, the home is the parent of every other group of a definitely social character. This is due to the fact that, essentially, the home can be adequately defined only through relations that are correlatives. The limitation involved in this makes it impossible, within the same group, for the child to occupy any other place than that which is determined by the coexistent parenthood of other members of the home. The child can not change place with its parents. The child relation, however, is not, in itself, incompatible with the parent relation, but to become consistent with it, it requires a new sphere for its legitimate exercise.¹² The principle involved in this particular case is capable of indefinite expansion. The farther we get from the original center in this multiplication of group on group, the more specialized do the relations which their members sustain to one another become. The interests of one group over against another become more and more exclusive. The fact, therefore, is as we now know it, that the same person is at once child, parent, brother, neighbor, etc. The importance of the fact in its bearing on ideals is that these existent conditions, which because they are so familiar seldom arouse inquiry, implicitly state the problems the solution of which determines the character and extent of one's human development. From the intellectual standpoint, the problem is, how these various predicates can be made consistent within the unity of the same consciousness; from the moral point of view, it is how conduct in these several relations can be brought into the form of a reconstructive ideal, and thus serve as an implicit principle of social and ethical development.

IV

In so far as the previous discussion enables us to do so, we shall state, in this section, the question of ideals in some of its positive aspects. Only a word or two, however, can be offered on the points of greater importance. The ideal, in the first place, implies some form of transcendence. We began our consideration of this subject

¹² It has always seemed unnatural to the writer for a young man to hang up his hat in the home of his newly wedded wife, or *vice versa*, a custom which because it is quite common is not for that reason justified.

by referring to the fact that it was this characteristic of ideals that determined the naturalistic and theological estimate of ideals. We may now point out that it is a too rigid interpretation of what transcendence may mean that prevents a recognition of the degree of truth in each of these views. In this connection, it is pertinent to call to mind the distinction drawn by Kant between the transcendent and the transcendental, and to remark that transcendence, which may be held in the meaning of either or both of the senses indicated by Kant, is now commonly used to signify what, in the usage of that thinker, only the first one stood for. It is in this way, for example, that the theological writer speaks of God—the Ideal—as a Being who is metaphysically transcendent. He has Being in and for himself. The naturalistic reaction against this mode of conceiving the problems of life and mind insensibly leads the positivist to approximate, if not to adopt, the transcendental view of ideals and in doing so to banish them from the sphere of determinate knowledge. No doubt objections might be urged against the former view, but it has the merit of being clearly conceived and stated. Objections also might be urged against the other view if only it would take the pains to think itself into consistency and express itself unambiguously. The transcendental view is acceptable to naturalism because it gives ideals a subjective interpretation, but what stern denial should we hear of their instrumental function when this is affirmed to extend not only to ethics and religion but to science as well! But it is to a transcendental view of ideals that the course of our discussion directly leads. In making this statement we have in mind the importance of affirming of ideals, what the study of their genesis serves to emphasize, that they are elements of experience which lie beyond the limits of any present experience. The difficulty, at this point, is to see how that which is no part of the present system of facts can have any relation to the way in which the present system undergoes development. Yet, with an equal show of reason, it might be asked how any given group of facts could become something which, at the present moment, it is not *unless* part of what it really is somehow lay beyond what it now shows itself to be. The problem of ideals, consequently, presents itself as an antinomy which, as we have endeavored to show, gets its solution in the concrete experience of the race. In experience, the contrast is not so sharp as our logical modes of thinking would seem to indicate. For there, the fact which the term transcendence is intended to denote is this: the ideal is a term which gets applied at different times to different experiences to indicate the way in which they are related to the complex of facts that constitutes a given situation. This is what we mean by the

phrase, 'experience is a guide to future action.' When we are called upon to act, the organized habits of a lifetime, in the form of an ideal of conduct, provide the key to what we ought to do in the given instance. So it is in the world of thought. The body of organized knowledge determines the solution we find for every new problem. Hence it is that thought and conduct are ideal constructions. But this they could not be unless the ideal transcended the limitations by which the theoretical and practical problems are alike made determinate.¹³

A second characteristic of ideals may now be indicated. It follows from the nature of the ideal as a relation within the total complex of facts by which our problems are determined and solved that it is some part of a conscious experience. And yet we said just now that it falls outside of, that is to say, transcends, the actual experience. The two positions are not contradictory. For it may be pointed out that there is more in experience than is allowed when we have an exclusive regard for the data which define the problem as such. (The span of consciousness is wider than that part of it which at any time is focal.) From the standpoint of naturalism, the idea could have no functional value, it could be only a content of consciousness, and hence Hume, for example, does not hesitate to speak of '*impressions* of memory.'¹⁴ Now it is the analytic method that leads one to emphasize the importance of a doctrine of elements. There is no need to undervalue the truth of this standpoint. But is there not danger of overestimating it? This seems to be the case when the argument in regard to ideals is made to run as follows: All contents of consciousness, directly or indirectly, are impressions. Ideals, you say, are contents which appear in the form of ideas. But ideas are, indirectly, sensations. Therefore ideals are not essentially different from sensations. Show me, then, the impression from which your ideal is derived, and we can talk understandingly about it. But, we reply, we can not talk, understandingly or otherwise, about an ideal on any such terms; for the moment it is transmuted into impressions, it is no longer ideal, and as long as it remains ideal, it is, *ex hypothesi*, incomprehensible. We may, however, without adding to the doctrine of experience another set of factors, in the Kantian fashion, in the form of ready-made principles of understanding and reason, maintain the ideal as a content of experience

¹³ In this paper we are confined to the epistemological aspect of ideals. If it is of any interest, the writer is willing to confess his belief in their metaphysical validity.

¹⁴ Treatise, Bk. I., Pt. III., sec. 5. It should be remarked, however, that Hume's epistemology depends upon ideas of both memory and imagination, as the organizing principles of knowledge.

and still hold to the transcendental view of the nature of ideals. For the problem is to see how that which is within experience can at the same time transcend experience in such a way as to provide the ground of possibility for a positive metaphysic of experience. But leaving the transcendent character of ideals aside, it is in order to point out that, as contents, ideals are always present along with the perceptual data which are the terms in which our problems are defined. In order to illustrate how this can be, let us suggest that every logical definition and all scientific classification are possible only on the supposition that the position we are stating is true. Underlying both these methods of knowledge there is a mental process which validates the judgments to which each conducts, and which may be expressed in the general form, 'This is that.' Now, the only question we are concerned with, from the present point of view, is, what is the 'that'? What, in consciousness, is it that this term denotes? In the logical definition, it is the 'genus' through which the 'this,' whatever it may be, becomes specified. Definition is a process of specification, as the text-books say, *per genus et differentiam*. The 'that,' in the other case, is the class, the group of things which has the same general characteristics. However, this only affirms that we know the particular through the general. It does not tell us whence we get the general, or what the general is. As our study has led us to see, the general, whether it be simple or complex, is always an idea. The perceptual, as such, is never more than particular, and in this feature it is related to the general as the impression is to the idea.¹⁵

The third characteristic of ideals is found in their function. The transcendency of ideals is due to the fact that they are contents which are qualitatively distinct from the presented material of consciousness. This difference is indicated by the term—idea—which is used to describe this class of contents. But while all ideas possess the two characteristics named, not all ideas are ideals. It is for this reason that they may be neglected in favor of a rigidly naturalistic explanation of experience in those cases where they are, as we say, *mere* ideas. It is only when ideas function in the organization of experience that we have the right to speak of them as ideals. Ideals are ideas which, arising in the course of experience, are modified by the experience to which they give coherence. They are not technically causes and, in the nature of the case, can never become causes. They are factors of consciousness which are instrumental to the end of realizing hitherto unique situations. Now that ideas have this

¹⁵ On the relation of the general to the particular, see the remarks of H. Poincaré, 'La Valeur de la Science,' p. 142.

function, the whole body of our knowledge, both theoretical and practical, certifies. No less in science, properly so-called, than in ethics, esthetics and religion, is illustration of this fact to be found. Let the idea of measurement, for example, take possession of the human mind as a criterion of that knowledge which it is allowable to call scientific, and then we consider everything as potentially measurable, and without further ado deny the term knowledge (*scientia*) to whatever either does not or can not submit to methods of quantitative determination. What has been quantified is knowledge; everything that falls outside is, at best, subject to further investigation, and if, in the end, anything remains there is no name for it but illusion. We are not concerned with the adequacy of this position; it is mentioned merely for the purpose of illustration. The idea of measurement, as it figures in modern science, is an ideal not merely because it is an idea, but because it is an idea that has become functional in the organization of those groups of experience in which the particular sciences are more directly interested. It is not otherwise with the anthropological sciences. When, for example, we are required to conform our behavior to the acknowledged standard of our class we do so, not because we must, but because there is, at the time, no other ideal which is operating in the interest of variation. We obey, that is to say, because the law in the case supplies us with an ideal through which it is possible to harmonize experience. But what need of further illustration? The truth is that knowledge, whatever the several forms it may take, is made possible by the ideals which are developed on the basis of experience, and which, through the widening and deepening of the experience they make available, are themselves brought to complete development in the theoretical and practical progress of the race.

The more important points of the discussion may be briefly summarized:

1. The conditions under which the human infant normally exists are sufficient to determine his growth in mental faculty so that from being imitative and non-moral, he becomes a rational and moral member of society.
2. The principle of becoming in this process of socialization is the ideal.
3. The ideal, we have said, is at once the product of experience and the organizing center of all knowledge and conduct.
4. The ideal because it is an idea is a transcendental element of experience which, as we believe, is not without a transcendent character.

5. The essential quality of ideals is found in this functional relation to the individuality of experience. By means of the ideal, experience is transmuted into knowledge.

ARTHUR ERNEST DAVIES.

OHIO STATE UNIVERSITY.

REVIEWS AND ABSTRACTS OF LITERATURE

The Myths of Plato. J. A. STEWART. London: The Macmillan Co. 1905. Pp. vi + 532.

Professor J. A. Stewart has made a useful book by collecting, translating, and illustrating with copious extracts from the literature of mysticism and folk-lore the 'myths of Plato.' His somewhat desultory and rhapsodical Introduction may be read with interest by everybody, and with sympathy by those who experience the special quality of 'transcendental feeling' which Plato's poetry and eloquence awaken in a scholarly and cultured but not wholly critical mind. More austere and hard-headed (or hearted) censors will have their reserves. We may cheerfully concede that Plato's myths are 'poetry' without feeling that our sense of their beauty is quickened by Professor Stewart's random quotation of poems whose only associating link is the quoter's enthusiasm. The 'Tale of Er' thrills Mr. Stewart, and so, he tells us, does the twenty-fifth sonnet of the 'Vita Nuova,' or Wordsworth's 'Duddon,' or Tennyson's 'Row us out from Desenzano,' or Shelley's 'Adonais,' or Whitman's 'When Lilacs Last in the Dooryard Bloom'd.' I share all these thrills save the last, but except as thrills they do not resemble one another or my feeling for Plato's myths.

If we abandon ourselves to feeling, all feelings are in a sense the same. But such emotional expansion is not necessarily 'transcendental' in any but a Pickwickian or ecstatic sense, nor is it genetically or actually always a persistence of the 'dream consciousness.' Still less can these vague terms be applied to such conscious and clearly defined workmanship as the Platonic myths.

Plato stirs emotion, but he never abandons himself to it or wishes us to do so; and nothing can be less Platonic than the proclamation of the hegemony of sentiment and intuition over clear-eyed reason. It may be 'good that man should thus be made to feel in his heart how small a part of him his head is,' but this was not Plato's purpose. The Tennysonian heart that stands up in wrath and answers 'I have felt' would be bidden by Plato to know its place midway between the head and the liver. It is the second, not the first. Plato uses the rhetoric of mysticism and Orphism to commend convictions which he cherishes or believes salutary for mankind. But the pretensions of the individual mystic he always treats with irony and contempt. The inspiration of the poet or the seer, even when conceded for the argument's sake, is always subject

to the interpretations of the reason. The lower soul does not, as Plotinus says and Mr. Stewart seems to say, 'comprehend in silence the secret plan of the universe as it is and convey it in vision to the reason.' The relation is precisely the reverse. Reason, the 'Timæus' humorously tells us, guides the unreasoning appetitive soul by picture language of phantasms painted on the polished mirror of the liver.

The Platonic myths, then, are not 'survivals of the dream consciousness,' nor 'revelations of something new and strange,' nor the 'inrush of a vast experience.' They are conscious artistic allegories partly symbolizing truths elsewhere established by dialectic, partly depicting probabilities which reason can not verify in their picturesque detail.

The distinction between myth and allegory so much labored by Professor Stewart resembles that which some writers attempt to establish between fancy and imagination, or between genius and talent. Such terms are convenient rhetorical synonyms for 'higher' and 'lower,' but they do not admit of definition except by a skillful dialectician in a particular context. A spontaneous outgrowth of the popular, an organic creation of the artistic imagination, we may dignify as a myth. If the didacticism is over explicit, the 'lesson' too trivial, the detail imperfectly fused or shaped in the forge of imagination, we degrade it to the rank of allegory.

Plato's tales are myths in that they deal with the supreme interests of the soul and their artistic form and unity is the creation of 'genius.' They are allegories in that their intentions are minutely predetermined by conscious thought, and the detail of the symbolism is as clean-cut and precise as that of Dante.

No sharp distinction can be drawn between prolonged metaphors that pass into allegories as the divided line, the mutinous crew, the cave in the 'Republic,' the myth of the 'Politicus' devised to illustrate a point in the argument and relieve the strain of continuous dialectic, the myth of the 'Phædrus' embodying the Platonic psychology, and the eschatological myths of the 'Phædo,' the 'Gorgias' and the 'Republic' which confirm the faith in or proof of immortality, paint to the imagination details 'something like which must be true,' and allegorize sometimes humorously many characteristic minor Platonic ethical judgments.

Mr. Stewart is aware of all this, but still pursues the will-o'-the-wisp of an absolute distinction: "The myth is distinguished once for all by weight and ring from allegory" (p. 15). "The mark of a true myth is that it sets forth the *a priori* elements in man's experience" (p. 221). The Platonic myth 'awakens and regulates transcendental feeling' (p. 45). The separate figures of the Spanish Chapel frescoes he tells us are allegorical, 'but the whole picture is a myth.' In the 'Phædrus' the chariot itself is allegorical, its 'Path through the Heavens is mythic.'

As Thackeray's 'Bulwig' would put it, 'respect everything that begins with a capital letter.'

The upshot of it all is that Mr. Stewart prefers the word 'myth' when his own feelings are deeply stirred or when the embodied doctrine is not

a special dogma of the writer but one of the Kantian 'Ideas of Reason.'

These Kantian ideas play a large part in Mr. Stewart's interpretation of Plato. He admits, I am pleased to note, that the distinction between ideas of the reason and categories or concepts of the understanding is not explicit in Plato. But he believes that we shall do well to keep it in mind as we read. This simply means that Mr. Stewart himself enjoys Plato most through Kantian spectacles.

The actual justification of the comparison is slight. Plato never said with Kant that God and immortality can not be proved. But he was probably not quite satisfied with his demonstration of immortality, and he lets us see in the 'Laws' that he regards a plausible proof of God's existence as an indispensable support to legislation and public morality. He never distinguished ideas of reason from concepts of the understanding, and the distinction is incompatible with the theory of ideas rightly interpreted. Unlike Kant, he completed his demonstration of the moral government of the world before resorting to the supernatural 'sanction.' The third Kantian idea, that of 'freedom,' he never discussed at all in the modern sense of the problem. Our author's Kantian analogies, then, have little historical justification, and will probably tend to confuse rather than to help the student.

Mr. Stewart's extensive use of illustrations drawn from folk-lore and primitive literature is in harmony with the prevailing fashion, and his quotations from the 'Kalevala,' the nursery tales of the Zulus, the legends of the Maoris, the British Museum Bestiary, and the 'Orphic' writings undoubtedly add to the interest of his pages. I can only record my conviction that the student will derive from his book an exaggerated notion of the significance of these things for Plato. Some of the motives of Platonic myths are doubtless widely diffused in folk-lore, and their origin is a legitimate topic of anthropological conjecture. The imagery and sentiment of Orphism appealed strongly to Plato's imagination. But all this was merely the material which the artist and thinker employed with conscious literary skill for his own purposes and the exposition of his own meanings. To interpret these purposes and meanings from his own text is to understand Plato.

There is space for but a few words on some points of detail and on the translation. On page 348 Mr. Stewart quotes with approval Masson's suggestion that commentators have missed the humor of Milton's Latin poem on the Platonic idea (as conceived by Aristotle) and have wrongly supposed Milton himself to be censuring Plato. But the conceit that Plato, who banished poets, was logically bound to banish himself as the greatest inventor of them all was a commonplace in antiquity, and is repeated by Milton in his 'Areopagitica.'

On page 303 he seems to interpret the Aristotelian *καθάρσις* as a 'flash of transcendental feeling.' Mr. Stewart himself may take the 'purging' of the emotions by poetry in that sense, but he is, of course, aware that this is not Aristotle's meaning.

The statement on page 3, that the comparison of Socrates in the

'Meno' to the numbing torpedo may refer to mesmerism is utterly fantastic.

The comparison of the 'Phædo' myth with the topography of Dante is most interesting, but the suggestion, page 110, that the upper world of the 'Phædo' may have been localized at the Antipodes like Dante's Mount of Purgatory is plainly wrong. It was the entire outer surface of the atmosphere.

On page 267 the third substance of the soul in the 'psychogonia' is not the 'Unity of Apperception,' but the 'mixed being' of the 'Sophist.'

It is impossible to identify the pillar of light in the myth of Er with the spindle of necessity (p. 102). The statement that Plato makes freedom consist in *esse*, not in *operari*, attributes to him an idea of Spinoza, Kant and Schopenhauer wholly foreign to his thought.

The translation is excellently executed in the pseudoarchaic, Biblical, 'Morte d'Arthur' style, which is distasteful to many critics, but which on the whole is better suited to the myths than is the easy colloquialism of Jowett. It is substantially correct. A few errors may be noted. On page 215, 'Protag,' 320 D for 'compounding them of earth and of fire, and of whatsoever is made by the mingling of fire and earth' we should read 'and of whatsoever is mingled with fire and earth,' i. e., the other two elements, air and water. This is proved by *Timæus* 42 E, 74 C and 31-2. Page 78, *Phædo*, 108 B, ἐκτρομένη, etc., probably does not mean 'having fluttered about it, etc., for a long time,' but 'because it has long been agitated (with carnal appetites), etc.' On page 150, πνίγους means 'stifling heat' not 'frost.' On page 184, *Polit.*, 272 C, εἰ δὲ does not mean 'and even if,' the 'even' is not wanted. On page 312, *Phædr.*, 247 C, περὶ ἣν τὸ τῆς ἀληθοῦς ἐπιστήμης γένος does not mean 'round about this substance dwelleth true knowledge,' but 'with which true knowledge is concerned.' Cf. ἡ περὶ τὸ ἐν μάθησις *Rep.*, 525 A. On page 404, *Symp.*, 192 A, ἄνδρες should be taken predicatively and emphatically, not 'they alone of all men,' but 'they alone develop into men.'

PAUL SHOREY.

THE UNIVERSITY OF CHICAGO.

Enigmas of Psychical Research. JAMES H. HYSLOP. Boston: H. B. Turner. 1906. Pp. 427.

Objectively Dr. Hyslop's book is quite readily described. It gives an account in a series of evidential chapters of certain phenomena—partly experimental and partly narrative—that superficially suggest the intervention of supernatural agencies, presumably of a psychological character. Oracles, crystal-vision, telepathy, dreams that foreshadow reality, apparitions, clairvoyance, premonitions, the alleged reading by mediums of the future and the private affairs of their sitters: these are the data that make up the volume. Books of this character are no longer uncommon; among them Dr. Hyslop's writings hold a creditable place. They serve to acquaint the general reader with the views of those who, without any leaning towards extravagance, find themselves compelled, seemingly by

the logical force of the evidence, to attach high value to the collections of narratives and data.

To philosophical readers the two dominant interests in such an endeavor are to what extent the author has succeeded in formulating any illuminating conception of the *modus operandi* of this 'superpsychology'; and, again, what relation obtains between these alleged results and conceptions and the accredited issues of modern science in general, and of modern psychology in especial. To the former vital point no thorough attention is given. It is set forth that some of the evidence, if credible, is tentatively consistent with a telepathic hypothesis, if only a telepathic hypothesis can be formulated that does not make nonsense of psychology; that yet other evidence seems to demand the intervention of departed spirits and brings Dr. Hyslop to his experimentally revealed 'spiritual' survival of bodily conditions; and that yet other narratives demand the presence of superpsychical and superphysical powers not necessarily involved in any of the other procedures. Dr. Hyslop is content to follow the evidence—which he naturally credits as fact—to whatever conclusion it may lead. He believes it premature to formulate the principles involved in the underlying process or processes, and pleads for ever more numerous and more coercive data that shall inductively spell out their own message.

So last as first, the prime issue is bluntly this: Shall the domain of physics and psychology stand as the common and natural estate of what science has agreed to survey under the principles that form the intellectual heritage of the race, and yet leave room for phenomena that, germane in scope and issue, take place by processes wholly subversive or in substitution of the great uniformities? Or shall there be but one all-encompassing adherence? It is at this point that Dr. Hyslop's views, and the views of those who stand with him, become meaningless for those to whom the philosophy of science bears a commanding message. Whatever these narratives may mean (and many of them have very little meaning to the psychologist, however interpreted) they *must* mean something that is adjustable to the great cosmos of facts that make psychologists respect their calling. The new faith that is asked of us by Dr. Hyslop and his guild means apostasy to the old. Doubtless this is the crux at which argument availeth little; and each pursues his course according to the faith that is in him, and with little comprehension of the enthusiastic devotion of his divergent neighbor.

Yet Dr. Hyslop offers one very tangible argument that invites a direct attack. From the first, and throughout, he contends that his method is that of investigating the residual phenomena of science; that these, whenever favorably investigated, have opened up new discoveries, and recently have given us radium and X-rays and much else. Now this analogy is wholly false. The hypothesis that the 'psychic researchers' entertain to explain their phenomena are not extensions or corrections of the standard psychological conceptions, but subversive of them. They are not residual phenomena in any sense; they are non-conforming at the

mildest, nihilistic when explicitly developed. If the X-ray theorist had contended that his effects were produced not by any physical agency at all, but by dematerialized spirits, and if the appearances of radioactivity were to be interpreted as indicative of some superphysical influence subversive of all existing principles, then the analogy would begin to hold. But the X-ray and the radium phenomena found a place within the pale, and not beyond it; and therein lies the difference between the extreme right and the extreme left. The psychical researcher turns over the ordinary hallucination or dream to the psychologist, but reserves the 'veridical' hallucination for himself as in content significant of the play of agencies unnecessary and unrelated to the principles that shall (and incompletely do) account for the psychology of hallucinations. A physics of this type would be just as unphysical as a psychology is unpsychological. There would be the usual movement of matter by the application of material forces; and by exception chairs and tables would occasionally perform excursions without contact, through hidden 'spiritual' or other agencies. Ordinarily inert bodies would behave without regard to human desires; but in critical situations they would save the day by provident intervention. There is no mean. One can not bring in the Southern verdict of 'almost guilty,' or claim that events are almost providential. Whatever one may be willing to yield to Dr. Hyslop's interest in his investigations and their possible significance, there must be no mincing of issues, and there must be no concession to his contention that he is in any scientific sense investigating the residual phenomena of psychology. That unfortunate term 'psychical research' must not be held responsible for the irrelevancy of its nomenclature; but it is wholly fair to demand of its sponsors that they accept the consequences of their philosophic conceptions. They are not proposing to add or extend the realm of present-day science, but are claiming an adumbration of another world beyond. Dr. Hyslop has enrolled himself unmistakably with the prophets. He must be content to go without honor in the country that he has deserted. And yet it is to be held fortunate that an exponent of a faith that makes slight appeal to those who stand with the reviewer should find a spokesman who in general has so capable a comprehension of the philosophical implications of his enigmas.

JOSEPH JASTROW.

UNIVERSITY OF WISCONSIN.

Association des idées chez les idiots et les imbéciles. BOULANGER and HERMANT. Ghent: A. Vanderhaegen. 1906. Pp. 137.

The authors begin with a short review of the association theory, and after this presentation of the laws of thought of the normal individual they discuss the associations of ideas in the idiot.

In order that sensations or images arising from them may enter into the associative life of the idiot, these sensations must appear with more marked intensity than is the case in the normal individual. In the latter, sensations and representations may exist in the hazy realm just outside

of the clear field of consciousness, but yet by their associations may play an important part in determining what elements shall arise above the threshold of consciousness. In the idiot the only associations possible are between elements which enter into full consciousness and possess a definite intensity; the subconscious here plays little part, and this want in the mentation of the idiot makes his mental life simple, rude and clear-cut. In the normal individual every sensation may touch by numerous associations an infinite variety of conscious or subconscious elements, and this interdependence of all the mental elements constitutes the unity of a personality; the variety of the reactions of the individual depends upon the complex association of conscious and subconscious elements; such a variety of reaction is not possible to the idiot, where associations are few but rigid; thus an almost fatal automatism replaces the spontaneous choice of the normal man. The dearth and fixity of their associations are shown by the fact that as a rule idiots give the same association when the association series is reversed, that is, when a previous answer is now used as reaction word. On the average the normal individual gives the original test word in only 30 to 50 per cent. of the reactions. As the receptive activities of the idiot are coarse and limited, so his reactions to the environment lack the great variety of choice of the developed individual. As to the detailed mental attainments of the idiot, the notion of an object, of property, of place relation and of causality—all these are within his competence; his logic is that of the normal individual. The mentality of the idiot is poor, but not distorted. In some respects the idiot resembles a child, but he wants the imaginative wealth of the latter. The idiot is stable, with an undeveloped mind, while the imbecile is unstable; the attention of the imbecile may be momentarily good, but is extremely fugitive; while the idiot is too little developed to lie, the imbecile is a born liar.

The authors come to certain practical conclusions with regard to the education of the idiot. In the sphere of the concrete the idiot by frequent association can arrive at a considerable height of development; he may become even an expert artisan, but his education must always be by the concrete, and to attempt to inculcate higher abstract ideas, such as the idea of God, of the soul, etc., is to waste one's time and to run the risk of distorting those faculties which he does possess.

The work as a whole is conscientious and gives a fair analysis of the intellectual aspect of the mental life of the idiot, but such a work is necessarily rather barren. When attention is considered a mere form of association, then, of course, the interests of the individual are merely dissolved into a sequence of associated ideas and the whole mental life is presented as nothing more than a sequence of ideas devoid of feeling tone and stripped of their dynamic equivalent. In such a case we are no longer dealing with concrete facts; the chief psychological value of an investigation of the associations of an individual, or of a group, would be in enabling us to determine the trends and interests and types of reaction of that individual, or group; but to do this the ideas must

always be considered in their relation to the living organism whose ideas they are. The authors, for example, explain the idea of property as depending upon the association between the idea of an object and that of an individual; they make no reference at all to the feelings which accompany personal possession. In the education of the idiot the question of the interests, the likes and dislikes of the individual, play an important rôle, to which the authors do not refer.

While the work is an interesting psychological analysis, it contributes little to our knowledge of the mental life of the idiot. There is no attempt made to discuss the imbecile in any detail.

C. MACFIE CAMPBELL.

STATE COMMISSION IN LUNACY, NEW YORK.

La proposition et le syllogisme. J. LACHELIER. *Revue de Métaphysique et de Morale*, March, 1906. Pp. 135-164.

The author distinguishes relative propositions from propositions of 'inherence,' such as 'Peter is a man' and 'all men are mortal' which 'analyze existence.' Both sorts of propositions give rise to syllogisms, but the laws of the former are said to be more akin to mathematics than to traditional logic. It seems to me, however, that from the standpoint of modern formal logic, if difference is to be made, quite the reverse is true with respect to their kinship to mathematics, for propositions of 'inherence' lend themselves readily to the operations of a calculus, while relative propositions do so only by elaborate particularizations and restrictions.

Propositions of 'inherence,' with which the paper is alone concerned, are of three distinct sorts, singular, general and collective. Our author thinks that general and collective propositions should always be sharply distinguished because the former, unlike the latter, do not depend upon a number of defined individuals. Collective propositions are 'determined' or 'undetermined,' for example, 'all the members of this family are well informed' and 'some of the members of this family are well informed.' General propositions are universal or particular, and they may also be understood in two senses: an abstract sense by which the quality 'man' implies the quality 'mortal,' and a concrete sense by which any being having the one quality has also the other. Formal logic has confused the relations of all but universals and particulars by treating singulars as universals and confusing collectives with generals.

As to the syllogism, there are three figures having the following relations: the first figure alone can prove a proposition of inherence, the second overthrows the minor of the first, and the third overthrows the major of the first. Keeping the five sorts of propositions in mind, the modes of the first two figures are ten each, but the third has fourteen modes. If in the first figure we substitute for the minor the contradiction of the conclusion, we demonstrate in the second figure the contradiction of the minor, and if we substitute for the major the contradiction of the conclusion, we demonstrate in the third figure the contradiction

of the major, and in this manner we can develop the ten modes of each figure symmetrically. The third figure with its fourteen modes introduces a slight asymmetry unless we extend the modes of the first two figures by weakened conclusions, which M. Lachelier rightly concludes is too high a price to pay for symmetry.

The paper may be of interest to those still delighting in the artificialities of syllogistic and unwilling to deal with them by the method of Mrs. Ladd-Franklin, which dooms such discussions of modes and figures by laying bare the real nature of the formal reasoning involved.

HAROLD CHAPMAN BROWN.

COLUMBIA UNIVERSITY.

JOURNALS AND NEW BOOKS

ARCHIV FÜR SYSTEMATISCHE PHILOSOPHIE. February, 1906, Band 12, Heft 1. *Ueber Begriffe, Definitionen und mathematische Phantasie* (pp. 1-32): K. GEISSLER. - All proper definition rests on elements that can not be defined, but which do exist. Mathematicians who disregard this general principle either indulge in mere word-spinning or at least have an erroneous conception of their work. They introduce new elements into the web of demonstration without either defining them or making it clear whether their existence is real or imaginary. Like Kant they suppose the definitions of point, line, etc., to be independent of each other, and yet to permit of synthetic, *a priori* judgments. To be concluded. *De Voluntate* (pp. 33-54): B. LENCKE. - Our knowledge of the will is in part antecedent of all experiences, for the following axioms do not depend on experience; will always refers to some *thing*; in every will there are two kinds, desire and aversion; there is degree; and there is a will-zero, or indifference; will is a continuity of degree, not of parts; no change of degree in will occurs without a cause. Will itself must be known *a priori*. Will is a movement which is known only from one side. The law of desire is, the further an object is removed the greater is the possibility of desire for it. The law of aversion is that the nearer the object the greater the possibility of aversion. *Exakte Darstellung aller Urteile und Schlüsse* (pp. 55-58): HOFFMANN. *Bei welchen Tatsachen findet die wissenschaftliche Begründung der Erscheinung ihre Grenzen?* (pp. 59-65): R. SKALA. - *Hume's Theorie der Leichtgläubigkeit der Menschen und Kritik dieser Theorie* (pp. 66-83): B. WITICO. - The source of credulity is in childhood, preceding reflection. *Ueber Phantasiegefühle II.* (pp. 84-103): E. SCHWARTZ. - The joy of an event imagined springs not from the presence of the idea of that event, but from the judgment present that the event will occur. The intensity of 'fancy-feelings' varies according to four factors: the ideas that excite them, the 'earnest-feelings' to which they are related, the presence of a disposition to related earnest-feelings, and the emotional environment. *Die Metaphysik des XX Jahrhunderts als induktive Wissenschaft* (pp. 104-113): L. POHORILLES. - Transcendental realism clears the way for an inductive

science of metaphysics. *Two Forms of Monism* (pp. 114-120): J. LINDSAY. - An argument for spiritualistic as contrasted with scientific monism. *Jahresbericht über die Literatur zur Metaphysik* (pp. 121-140): D. KOIGEN. - This is chiefly given to Fr. Wyneken's 'Das Ding an sich und das Naturgesetz der Seele.' *Die neueste Erscheinungen. Zeitschriften.*

Guenther, Conrad. *Darwinism and the Problems of Life: A Study of Familiar Animal Life.* Translated by Joseph McCabe. London: A. Owen & Co. 1906. Pp. 436. 12s 6d net.

Jennings, H. S. *Behavior of the Lower Organisms.* A study of the objective processes exhibited in the behavior of the lower organisms, particularly the lower animals. New York: The Macmillan Co. 1906. Pp. viii + 366. \$3.

Klemm, Otto. *G. B. Vico als Geschichtsphilosoph und Völkerpsycholog.* Leipzig: Engelmann. 1906. Pp. xii + 235.

Souriau, Paul. *La rêverie esthétique.* Paris: Alcan. 1906. Pp. 169.

Strowski, Fortunat. *Les grands philosophes-Montaigne.* Paris: Alcan. 1906. Pp. viii + 356.

Wundt, Wilhelm. *Logik: Ein Untersuchung der Prinzipien der Erkenntnis und der Methoden wissenschaftlicher Forschung.* Stuttgart: Ferdinand Enke. 1906. Pp. xiv + 650.

NOTES AND NEWS

THE George Combe lectureship in general and experimental psychology at the University of Edinburgh will be filled by Dr. W. G. Smith, who withdraws from the position of assistant lecturer and senior demonstrator in physiology and lecturer in experimental psychology at Liverpool University.

DR. W. B. SMITH, recently elected to the chair of philosophy at the Tulane University of Louisiana, New Orleans, will spend the coming year in Europe, on leave of absence. His place will be filled, meanwhile, by Dr. Percy Hughes, formerly assistant in philosophy in Columbia University and instructor in philosophy in the University of Minnesota.

DR. WARNER FITE, adjunct professor of philosophy in the University of Texas, has been appointed junior professor of philosophy in the University of Indiana.

MR. D. J. COWLING, formerly assistant in the psychological laboratory of Yale University, has received the appointment of assistant professor of philosophy in Baker University, Kansas.

DR. NORMAN SMITH has been called from the University of Glasgow to fill the Stuart professorship of psychology at Princeton University, recently vacated by Professor Thilly.

PROFESSOR WILHELM OSTWALD will take the place on the International Atomic Weights Subcommittee vacated by Professor K. Seubert.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

THE RELATION BETWEEN THE ACT AND THE OBJECT OF BELIEF

THE issue raised over the nature of beliefs has been most satisfactorily presented and—at least in its fundamental metaphysical aspect—solved, it seems to me, in Professor Dewey's recent presidential address.¹ A belief is just as real as anything can be: this is the point which is settled beyond dispute, provided we free ourselves from the primary equivocation in the word 'belief.' Like all psychological terms, this has two possible meanings, one that of 'thing believed in' and the other 'the credulous attitude.' The metaphysical question as to the reality of beliefs may take on at least three distinct forms, none of which is reducible to either of the others, so far as I can see. These are:

1. Is the thing believed in real *as believed to be*? Is an object in which we believe precisely as we believe it to be?
2. Is the credulous attitude as such real? Is believing a real event in the world?
3. Is there any real connection or relation between believing and the thing believed? Or is the relation fortuitous, credulous attitudes bobbing up quite independently and embracing somehow or other whatever objects chance to be at hand?

The answer to each of these questions is sought and found by a direct inspection and analysis of experiences. Men have come to learn that the first question has two answers; things sometimes are and again are not as they seem. How to decide in each case whether there is some discrepancy between faiths and facts is a problem for the logical practitioner and the practical logician. The second question is answered in the affirmative, for all that is asked for here is the experience itself; the credulous attitude is obviously real as attitude, for we have all of us 'taken' it. The last question is more confusing: on the one hand we have the psychologists telling us that nitrous oxide can induce the credulous attitude independently of the kind of objects referred to in the attitude, while on the other

¹ *Philosophical Review*, XV., p. 113 ff.

hand plain common sense says that, in most cases at least, believing is a result of reflecting upon the nature of the things under consideration. The temptation is strong to believe that these two views are alternatives, but from both the logical and psychological standpoints I do not see why both views might not be true. The contrast between the two theories is at its maximum in the instances just cited; if we can explain the extreme psychological and the extreme logical theories in terms of a single hypothesis the remoter metaphysical issue will thereby have been brought somewhat nearer to its close.

This metaphysical issue may be stated interrogatively: Is there any real thing or any peculiarity of a real thing which is given us unambiguously through the medium of the believing-act and its reference object? Our third question above is seen now to be an outgrowth of the answer given to the first one. Experience, taken at its face value, says that something is assured us in some cases, while in other cases nothing is. The metaphysician, retaining his logical instincts, feels that if such polar differences were to be found in all acts of believing, then these latter could not be treated as forming a true class. Hence his question: Does not every act of belief give us some assurance about something? If not, then how can I believe in my beliefs? What could it mean to believe in beliefs if these latter were absolutely untrustworthy? Committing the detailed research of the correspondences between observed beliefs and observed confirmations of the same to the psychologists, the philosopher turns his attention to the generic character of the belief-attitude, searching after some universal mark which not merely defines the class, but stamps it with a price-mark, a worth.

The most easily noticed value of the belief-attitude is its functional one; by believing we manage to get along, adjust ourselves to our environment, and the like. But this can not satisfy the metaphysician, for believing also gets us into scrapes, severs ties of friendship, brings death, makes fanatics of million of men. Hence *mere* believing, the bare activity of being credulous, is strictly not valuable, *i. e.*, not advantageous in itself. It might easily be dispensed with under certain circumstances, to the advantage of all concerned, as in the case of reflex action. It is always a belief *in something* that is advantageous; plainly, then, the nature of the thing believed, or at least some relation between it and the way it is believed, is the source of the practical value ascribed somewhat laxly to the belief-attitude. When the bare activity is looked at from a somewhat biological standpoint, there is no more reason for calling it advantageous than there is for regarding, say, breathing, as a *sheer*

process, as beneficial. It is not inhalation and exhalation that has value, but inhalation and exhalation *of something*. The process, then, can not be evaluated apart from the 'elements' involved in the operation of the process.

In denying all philosophical value to the functional side of the mere belief-attitude we seem to have put the metaphysician into a hole; in saying that it is belief *in something* which is advantageous, we seem to have thrown the task of deciding what this something is back upon practical experience, which, as we saw in the answer given to the first of the three questions above, can not as yet give us a general answer in terms of the objects themselves. In practise, belief in fictions as well as belief in facts may be eminently useful, at least so far as practise does not turn into pure theory and strip values of their emotional souls.

It seems to me that in thwarting further research in this direction we have not cut off every line of fruitful inquiry. What the metaphysician wants answered is precisely the question raised in his mind by the exhortation to believe in his beliefs. Why should I believe in my beliefs?—he asks, and refuses to admit as wholly satisfactory the reply that believing, as such, is a useful occupation. Why should I believe that my beliefs are not merely conveniences and conventions, but are just what they purport to be, namely, convictions of the objective and (somehow) independent reality of the things thought about?—is his persistent query. And only in a direct answer to this will he find satisfaction. But such an answer, it appears, must be sought in an analysis of the belief-attitude itself and its essential relation to the belief-object. It is only by showing that the act of believing either expresses or implies something about reality that we can come to trust the act itself. In showing this, the *locus* of the pragmatic controversy is completely abandoned, for it is no longer the kinds of objects (types of behavior of things) which can justify our faith in the belief-attitude itself; it is now the relation between act and object, be this latter what it may and be the former colored highly or faintly with emotions, motor reactions, and the like. Can this shift of the problem be accomplished?

Unless I am mistaken, the old *reductio ad absurdum* of total skepticism can be remodelled to serve in this new campaign; there is a certain *a priori* possibility of the belief-act itself without which not only the objects of belief would cease to be believed, but also the very attitude of belief would be suspended forever. Even that stultification of belief accomplished by saying that, at best, we have present assurances about our own 'mental states' past and present

depends, it will be shown, upon a characteristic of the belief-attitude which contradicts pointblank that very stultification. For this characteristic I know no better name than self-transcendency, provided we take this to mean that the object of belief is determined by other factors than those which determine the act of believing in it. Self-transcendency, then, does not mean jumping outside the realm of experiences; it means finding that acts and contents are, in some respects at least, independent.

Take a simple case of belief now: I believe that I went down-town yesterday, which means, according to conventional terminology, that in the present representation my yesterday's trip is felt as having actually happened. The psychologist says that the act of believing this is confined to the present moment (in its origin at least). The credulous attitude, then, is not contemporaneous with the believed act. This distinction is immediately given and can not be conjured away by any theory of the subjectivity of time. It is only a special clear case of the equally inviolable distinction between act and content. The obvious fact that I can believe now, an hour from now, to-morrow, and ten years hence, that I went down-town yesterday is as good proof as one could wish for the lack of essential interdependence between believing and believed contents. The time of going down-town is not a determinant of the time of believing; neither is the converse true. And the same can be said of every other possible quality of the two factors.

Psychologists are ready with the objection that belief in the independence of an object is no more proof that the object is really independent than the ravings of a maniac prove the existence of demons. There is a certain amount of truth in this so long as we view a single abstract moment of believing. But how about the pragmatic test? What happens when we try to evaluate *that* act of believing itself? If there is any merit in judging anything by its context, bearing and implications, we must admit that there is a reason for the faith that is in us. For in order to do what Professor Dewey urges us to, in order to believe in our beliefs, we must take them as they are, at their face value, namely, as beliefs in something which is not itself an act of belief. A consistent rendering of the pragmatic plea is, then, a vigorous protest against one-sided subjectivism.

It appears, then, that two things may be said about the relation between beliefs and realities. (1) There is an *a priori* postulate to the effect that belief-acts do somehow refer to contents whose nature is not dependent upon the acts. This postulate says nothing whatever about the truth or falsity of particular beliefs; nor does it imply that beliefs must have some value beyond the moment of

their credulous existence. It claims simply that the belief function itself would evanesce with a belief in the non-transcendent character of that function; it would be a paradoxical case of suicide. (2) There is an equally *a priori* postulate to the effect that, inasmuch as all values lie wholly in belief-objects, every distinction in value must be a distinction in the nature and behavior of those objects. This is precisely the pragmatic contention, I think.

It is easy to show that every belief must *ipso facto* be in a transcendent and yet may in many cases actually be 'subjective' in one sense of this ambiguous adjective.² From the metaphysical standpoint, not only every belief-act is real, but every belief-object is too. The distinction of truth from falsity is a distinction wholly within the world of reals, a distinction between kinds of reals. In this sense there might be some apparent theoretical propriety in saying that truth itself is a 'relative' matter, were it not for the fact that the word 'relative' is too easily twisted into meaning 'not absolutely true.' As a matter of fact the 'relativity' of truth signifies merely that objects are 'true' when they maintain certain relations, *e. g.*, to other objects and to consciousness. Now it has long since been pointed out by pragmatists and humanists that physical and psychical realms are distinguished by the kind of relations and qualities characteristic of them. This means, not that those realms are only 'relatively different,' but rather that they are different by virtue of certain very real and objective relations. Bearing this in mind, we may now see how a belief may simultaneously be in a transcendent and yet be subjective. The object of belief need be regarded (1) as the true reference-object, the thing believed in, in which it possesses all those qualities which it is believed to possess; and (2) as an expression of merely individual, local, temporary relations, *i. e.*, relations borne by the elements of the consciousness-system to one another and to the external world. In this case the object is both transcendent to the act of belief in so far as other conditions and relations than those producing this latter are involved in the object itself, and also subjective in so far as the conditions and relations involved in the object's own existence are essentially local, existing only so long as certain peculiarities of the consciousness-system do.

An illustration may be useful here. While I am writing, I hear somebody talking in the next room; now the objects involved in a possible act of belief would be 'two men in the next room speaking

² This point is, I take it, an implication of the excellent distinction drawn by Dr. Montague between relativity and subjectivity in 'A Neglected Point in Hume's Philosophy.' *Philosophical Review*, XIV., 30 ff.

with each other, etc.' If somebody were to ask me whether I thought it possible that these objects could be a mere product or phase of my present belief-act, I should deny it emphatically; these men and their utterances must exist quite apart from my simply *believing* in them. But now notice that in saying this, I am by no means saying that they must exist apart from my consciousness-system as a whole. It is still possible for me to be convinced that the whole experience was a hallucination without surrendering the true transcendency of the belief-object. For I must still maintain that, although the reality of the speakers is now quite different from what I supposed it to be, it is still and must always be a reality which involves something more than *mere* believing does. For sheer belief, as a resultant of certain relations, could not account for differences in the objects of belief; something beyond the conditions inducing the credulous attitude must be involved. Put concretely, such transcendent conditions would now be perhaps abnormal blood-pressure in certain cortical areas, association with other thought-objects, and so on. The error in belief, then, was not an error in the belief-activity, as such; it was an error in interpreting the transcendent object. When I agree to call the original object 'subjective' I have by no means robbed it of its transcendent character; for it is still independent of the belief-activity, as can be shown in cases of chronic hallucination, where the patients finally come to disbelief in the actually given character of the objects: were the objects, which it is assumed recur identically to such patients, essentially dependent upon and constituted by the belief-activity, they would, of course, vanish with the cessation of belief in them. This is, of course, practically what some Christian Scientists would have us think, but I hardly think there is either merit or need in attacking such a fantasy.

In conclusion, it is to be expected that somebody will protest against the limited sense in which the term 'transcendent' has been used. The popular implication is that transcendency is somehow or other the same as spatial externality. That it can not be taken in this sense, though, but must mean 'independence' of one thing or function from some other thing or function has been agreed upon by the great majority of writers on this topic. Spatial externality would not be transcendent, even though external to our bodies (or minds), if extension were a true (mathematical) function of consciousness.

May we not, then, agree with both pragmatist and epistemological transcendentalist without straddling the fence? We may admit that nitrous oxide can make us hopelessly gullible, believing everything that pops into our mind or even having a feeling of certainty

without quite knowing what we are certain about; and we must also grant that perfectly definite objects of thought, i. e., objects being thought, may induce the belief-activity and make it refer to themselves in a certain way. In each case we are granting that certain conditions are necessary to induce the credulous attitude, and in neither case are we admitting that the objects believed in depend for their (real or merely believed) existence and nature upon the conscious activity of believing.

WALTER B. PITKIN.

COLUMBIA UNIVERSITY.

SELF AS A DEVELOPED FEELING COMPLEX

THE conditions arising in the investigation of self in ultimate analysis are so altogether unlike those arising in every other investigation as to suggest the necessity for a special method of procedure. Here the relatedness of the investigating agency to the investigation is that of the *unknown* setting about the investigation of this same unknown—*itself*. And the way the investigation is usually conducted is still more paradoxical. Here the unknown is naively carried along in the investigation—in the personal pronouns employed—as a something the *value of which is already known and taken into account*. Now although the self must in reality be carried along in these investigations, it is necessary, in order that the investigation be rationally conducted, that *its value be discounted* all through the inquiry. And when this discounting is not done, the whole may be reduced to a series of non-sense statements, if the terms employed to represent the object of investigation be substituted for those employed—the personal pronouns—to represent the investigating agency. And the substitution would be legitimate in this case where, as was just pointed out, there is likeness of nature. For instance, ‘when *we* interrogate consciousness’ becomes, by substitution, ‘when consciousness interrogates consciousness.’ Sometimes the expression is still more involved, as ‘when *we* look into *our* own mind’ becomes, on substitution, ‘when mind looks into mind’s mind, or mind’s own mind.’ And there is here a still further sense of confusion implied in the ‘looking in’ as involving a sense operation in self-analysis of an ultimate nature where it can not apply.

The hardest task the self is called upon to perform is to divest itself of those *structures of thought* by which it has climbed to its present height; in other words, to conceive itself to be what it

discovers in the ultimate analysis of self. Here only dynamic processes are met with. No background or substance is discoverable. If any did enter, it is not conceivable how it could help matters.

Now if it be admitted that the whole cosmos, including the self as usually understood, is but a *construction* of thought, the main difficulty has still to be met; there is something more paradoxical. It would seem from the peculiarities of psychical evolution that this thought-constructed entirety has come to imagine itself constructed out of *material* which has *not* been used in its formation, and to be in a *locality* where it is *not*. And under these fictitious conditions, when it attempts its own analysis, when it attempts to break away from these imaginary material or supermaterial structures for the purpose of discovering its ultimate nature, it comes across an impassable barrier, and then is forced to construct parallelisms, etc.

Believing that such methods must always lead to confusion, it is proposed here to reverse the order; that is, to take what seems discoverable in ultimate analysis as the elements of this complex, and with these attempt the synthesis. But in order to discover these elements, the whole structure as at present conceived must be removed, at least in imagination. And in this general work of clearance not only the subjective construction, but the objective, the whole constructed cosmos, may in imagination be dispensed with. And if it further be assumed that space and time are the *binding materials* used in these constructions, and are themselves complexes of the structural elements, they must be in like manner cast aside. But thoughts also as ordinarily conceived may be here considered as structures composed of simpler elements, and so this fact has to be taken into consideration in attempts to discover these elements. The field may now be conceived as clear of all structural incumbrances, and the question may now be asked, is there any discoverable residual or persistence with no definite space or time characteristics?

Before this can be replied to, the terms in which a reply can now be made have to be considered. Since all language seems to have been built up to express constructed thought or thought constructions, this language is for the most part barred out in attempts to express unconstructed thought or the elements which enter into these constructions.

In this investigation it is proposed to describe actual or *pure* experience, that is, actual psychical performances as *felt* in their *unconstructed* relations in self-examination—excepting those psychical appearances usually termed images. For these a theory will be advanced as to their ultimate nature.

The first general theory to be advanced as a result of these investigations is that the whole objective and subjective world in the last analysis is found to be but *constructions* of the *feelings*. And to make this fully appear, the further theory is advanced that what we have usually termed images are in their ultimate analysis but specialized feelings.

Having now very inadequately prepared the way, a reply may be made to the above question, which is, that *feelings* may be *felt* to persist by themselves devoid of all constructions.

Of course, it is somewhat difficult for the *human-feeling-complex* to sufficiently clear away structural influence as to be able to *feel* its own feelings in this pure state; but it can imagine earlier stages of evolution where these feelings may be considered to exist devoid of all thought or feeling constructions, that is, to exist as feelings only. And the concern is here the fact of existence or persistence regardless of any constructed background. It is presumed here that not only may feelings so arise, but that they appear under a double aspect, as agreeable and unagreeable states. So it will be convenient now to term this feeling a primary feeling, and these aspects its primary aspects. Let it now be further assumed that there is a *telos*, or end, bound up with these feelings, so that there is a continuous striving for increase in volume, intensity and duration of agreeable states. And in some way, as a result of this striving and for the *purpose* of better reaching the goal, portions of these primary feelings become *specialized*, the peculiarity of this specialization being that these portions of the feelings have now more *prominent* and more active characteristics, but have lost the states of agreeableness or unagreeableness, and as a consequence they have not that *sticky* immobility of the primary feelings, these specialized feelings being what is usually referred to as intellectual characteristics—images, etc.

After this specialization, there takes place in this complex of the primary and specialized feelings a peculiar activity—intellectual—by which the whole cosmos gets constructed by and for this feeling-complex.

Of course, there is no concern here with what may exist or what existence can mean outside the feelings, the inquiry here being what existence comes to be to these complexes. And this would seem to be the only inquiry if what is here assumed be accepted, namely, *that the feelings can never get out of the circle of their own activities except by this constructive or imaginary process, that is, only by the feeling-complex feeling itself as something other than its real nature.*

Now assuming the feeling constructive elements to have been found and the constructive stimulus to be involved in the teleological principle, displayed in efforts to increase the quality, number and persistence of agreeable states, the whole constructed cosmos, including subject and object, would only appear as an incident in the development of the feelings, enabling them the better to reach their goal. And so their reason for existence would seem to be that they facilitate the evolution of the feelings in some of its higher phases. If the development could have proceeded unaided by this complex structural arrangement, so much *work*, it may be conceived, would have been saved. And the same reasoning applies to these complex activities considered as intellectual operations. These *specialized feelings* and their manipulation are, as it were, an after-thought, found necessary as the situations in which more desirable states could be obtained became more complex. So that intellectual activities regarded by themselves may be considered as the mechanism or *tools* found necessary after psychical evolution had proceeded to a certain degree of complexity, and on account of the extra work their employment involves they are always abandoned as soon as the primary feelings *learn to feel* their way without their aid.

On a superficial view it may seem somewhat absurd to attribute anything like purpose to the feelings, as such. But why is it more absurd to attribute purpose to the feeling elements than to the feeling-complex, or self? It is a profound mystery in either case. But it may be observed in self-examination that what are here termed the primary or undifferentiated feelings are the *courts of last resort*, whose decisions are always final, after what, with a little exaggeration, might be termed the mechanical manipulation of the specialized feelings. Now although in ultimate analysis the whole cosmic structure comes out as a structure of the feelings and so in a sense may be considered fictitious, this in no way detracts from the exceeding usefulness of conceiving this structure as real, or even as absolute necessity in the higher complexes for conserving life and aiding in the acquisition of higher agreeable states, and even for explanations of some of the phases of the feelings themselves. And to the extent of its *usefulness* in these ways it should be employed, so that the criterion for the employment of this feeling structure would seem to be its *usefulness*, considered from the point of view of development. If it now be assumed that the *materials* and the *impetus* employed in the formation of self have been found, the question arises, can a rational theory be advanced by which this *structure* may be considered to have come into existence? In other words, can it be shown how by the complex activities of the feeling

elements the self, and also the not-self, came to be? This is what will now be attempted.

All indications go to show that the first structure, the first *feeling-cluster*, formed was matter or substance, and the way in which this came to be may be imagined as follows: Assuming first that the simplest form of psychical life consists in simple responses to stimulus by what has been here termed the primary feelings, the responses being attractive if the stimulus is conducive to the preservation or enhancement of agreeable states, and repellant if the reverse; then from the continued striving for more and higher agreeable states there seems to result an accommodative variation in the feelings themselves, so that details can be appreciated, or a greater degree of agreeableness can be obtained from the same stimulus, and more abundant sources of satisfaction discovered. Or, to put it another way: In the simple feeling complexes the feeling of contact must precede the setting up of states of agreeableness or the reverse; but after the development of the specialized feelings these states may be set up in the absence of or in anticipation of the feelings of contact. There then seems to take place a development in the relations of these special feelings; the principal of these relations appearing as a grouping factor, and the feelings of expectancy and order arising normally out of these relations, as will now be made evident.

As a result of what may now be termed a law of the feelings, and may be expressed as efforts to extract the maximum of agreeable states from all sources, there arise explorations and experimentation often in advance of ordinary stimulus, and in these operations a greater or less number of specialized feelings come into prominence. And after a number of like experiences these several feelings form themselves into a cluster or group; that is, they tend to recur together, giving a complex feeling in which the several feelings as such are submerged, and the group characteristic rises into prominence. This group feeling now so persists that when later one or more of the specific feelings composing this group are stimulated—a sight or touch feeling, for instance—this group feeling comes so much into prominence as to deceive the feeling complex into the belief that its presence is now due, as formerly, to the presence of the whole stimulus. But all through the earlier stages in the formation of these group feelings there are taking place specific activities of the specialized feelings—which may be termed verification—which are of the utmost importance in determining not only the future permanence of these clusters, but also the future attitude of the feeling complex towards them. For instance, on experiencing a new

cluster or group, the specific feelings which enter into its composition may be as *prominent* as the *group feeling*. There then arises the feeling of uneasiness—an unagreeable state—and this seems always to stimulate the specific feelings into renewed activity to again establish an orderly, comfortable feeling. Say, with a new group feeling there arises into prominence its visual ingredient. There may then arise a disturbed state due to the absence of permanency or *familiarity*. This state then stimulates further experimentation, and a touch feeling—the complement of the group feeling—results. Then there is immediately a sinking into the usual quiescent state, which in some way seems to establish the registration and permanency of this group feeling. It now comes to persist as a part of the *furniture* of the feeling complex, and when again it is stimulated into existence by any of its component elements there is no disturbance stimulating further experimentation, but a quiescent, familiar feeling,—what some have termed an exhausted state,—now persists: it *begins to feel as the thing there* and is said now to *be known*. And this arises solely through these feeling operations. But this attitude only applies to specific group feelings, which themselves become segregated from groups or clusters which do not give rise to this exhausted feeling, the feeling of *no-need-for-further-experimentation*. And still later these groups form into a cluster by themselves, a cluster in which the specific feelings have a greatly diminished prominence and the primary feelings seem to take a more active part in establishing the permanence of these complex clusters—general conceptions. Again, clusters which have an orderly variant—self-motion—also form groups by themselves, and later more complex groupings as in the former case; and there now arise those peculiar feelings of separation and distinctness, and the specific groups are expressed as dead and live things and, more generally, as dead and living matter or substance. Then innumerable classifications arise in these respective groups, determined by the discoverable specific variants therein. And there comes bound up with these group characteristics those nascent spatial feelings of a *thereness*, a *hereness* and a *betweenness*. Then as this segregation and grouping further advances, involving explorations of self, understood in a psychical sense, there arises the complex feeling of *something here like something there*. And then as greater distinction arises, a *body here like bodies there*; and, again, a *living body here like living bodies there*. And this is the first and *material* construction of self. This appears to have arisen normally, and in advance of self-consciousness, or before the rise of any ability to

reflect on the process. And it is well to observe carefully here this order of formation so as the better to avoid the usual confusion which arises when self-analysis is attempted. This formation commences from what is then felt as *outside* substance, and is consequently felt as outside substance in the early stages of its formation. But in more advanced stages in the development of the *human-feeling-complex*, the beginnings of self-consciousness, there arises a marvelous change in the program. It is now as if this complex was, as it were, for the first time let in behind the scenes, but the extreme novelty of the situation and indistinctness of vision causes the whole to be misinterpreted; or, in other words, these feeling complexes begin to feel the elements which enter into their own composition, but as they do not readily take on the constructive characteristics of all former experiences, but remain, as it were, *disembodied*, the greatest difficulty is felt in *placing* them. Now it appears that whenever the equilibrium, or the habitual states of this feeling complex, is disturbed, there always arise unagreeable feelings—irritation—which in turn stimulate the specialized feelings into those activities which will result in restoring the equilibrium or former habitual quiescent states. So now when these new, unordered and disembodied feelings are first experienced, they cause that irritation and the consequent setting up of the above-described psychical or feeling activities. But operation being limited by former methods of procedure and, as in this case, no *constructions* seeming normally to follow, resource is had to invention. And so a body is invented to contain these erratic presentations, and by this means quiescence is temporarily restored. But there seems ever to have existed a puzzle as to the form and locality of this invented body or envelop—this self-content. And this difficulty seems to have kept up a much more lively attitude towards these peculiar feelings and their makeshift construction than was usually displayed towards the more classifiable groups. Various forms have been imagined which have been *placed* in different localities in the *constructed* body—here material body—but its form in later times seems to have become so attenuated and altered in shape as to fit in turn comfortably the supposed material body itself and cause no inconvenience. And this is the general conception of self to-day—the objective self, the ‘me.’

But it is desired here to ascertain what self is in ultimate analysis, the subjective self. If the total is made up of feeling states, there must be some peculiarities in these feelings, their activities or grouping, which cause a portion to seem to stand out as self and the remainder as the not-self.

While there is the feeling of order in both groups, continuity in the feeling activities and immediate verification seem to constitute the main factors in the self group, in contradistinction to discontinuity and only mediate verification as factors of the not-self group. But as the primary feelings are among the constituents of immediate verification, they are thus involved in the immediate appearances or associations of these feelings with the self group. And this gives the feeling of close proximity of the primary feelings in the self. But in mediate verification the primary feelings do not seem to be projected as do the specialized feelings and their groupings which constitute the not-self.

That this immediate verification or reassurance which is a constituent of the self group is of the utmost importance for maintaining this group formation, may be readily seen. For instance, throughout the whole of the wakeful state, in addition to what is understood as the ordinary intellectual processes, there is going on a continuous but vaguely conscious record from what may now be conceived as various parts of the body which are immediately interpreted as a feeling of *here*, although they seldom disturb the ordinary psychical activities unless something goes wrong. If, say, while the subject is engaged in a train of thought one hand *involuntarily* passes over to rest on the other, and instead of the usual or expected feeling of softness and warmth there arises, say, a feeling of hardness and coldness, there will arise an immediate break in the train of thought, however deep it may have been, and all attention is turned to the investigation of this unusual occurrence. There seems to be an immediate necessity for a straightening-out process. This movement-feeling in ultimate analysis—which had it taken place in the usual way might have been wholly unconscious—has now risen into a position of first importance; something has happened to a *reassuring factor* which must be immediately adjusted, as it seems to involve a break or even a rupture in the continuity of the self complex.

Many experiments may be made demonstrating the absolute necessity of this immediate verifying or reassuring process for the holding together of the self complex, but they can not be given here. But one can imagine the predicament of the intellect in being suddenly isolated from all means of verification without knowing why or being able to give some cause for it.

To sum up. The psychical self, or feeling complex, can only feel itself as feeling entirely *disembodied*, although group formations seem to take place, and some of these seem to evolve to such a

marvelous state of complexity as to be able to feel their own elements and even their own structural formation.

But this seems to reverse the order as to what can be known. For here the self, or feeling complex, can know itself as a feeling complex, but can never know of a background or substance. For all *otherness* must come to it as structures of the feelings. So that this so-called matter, which was always thought of as the one thing certainly known, must always remain a profound mystery.

But although this dynamic and disembodied self is the only one logically revealed in ultimate analysis, it may be found convenient for all practical purposes of life to regard it as related to a specific part of this psychically constructed entirety which I call *my* body in the relation of function to organ.

And if this be done there does not seem now to arise any impassable gulf or any need of a parallelism.

E. A. NORRIS.

ALBANY, N. Y.

DISCUSSION

THE FUNCTION OF THOUGHT

IN a discussion in Vol. III., No. 15, of this JOURNAL, Professor Santayana deals with the complaints of ambiguity in his conception of the function of thought as expounded in his 'Life of Reason.' Professor Santayana's treatment consists in reducing to metaphor all the passages in 'The Life of Reason' which speak of thought as a reconstruction of mechanical processes; and in frankly accepting thought as a mere 'accompaniment,' a 'lyric cry' of the mechanical processes. To many this method, in so far as it succeeds in curing the ambiguity, may seem worse than the original malady.

I say 'in so far,' for even here where the issue is up for explicit discussion, I confess I find that some of Professor Santayana's sentences still puzzle me. Thus in the eighth thesis (p. 411) regarding the function of thought, which Professor Santayana says represents his own view, after reading that 'thought is without efficacy either in its moral or its existential capacity,' we find immediately following that 'thought might still be called efficacious in the only sense, not magical, in which its efficacy would be at all congruous with its intent; namely, *through the natural efficacy* of the creature whose life it expressed.' What do 'through' and

¹ Italics mine.

'natural efficacy' here mean? Again, on the following page we read: "It is certain that when a man reflects his action changes in consequence." Yet, in the next sentence, 'the consequences of reflection are due to its causes—to the competitive impulses in the body, not to the wistful lucubration itself.' Here 'consequence' evidently does not mean effect; and mechanical processes appear to have two kinds of effects—thought and other mechanical processes. Now, if there is to be such a distinction and separation of the mechanical and the psychical as to call one 'cause' and the other 'effect,' it is somewhat difficult to see why the causal relation in one direction should be so hospitably received, while in the other it is regarded as a 'superstition' of the 'unreconciled childishness of man.' Or if in one direction it is such a superstition, why is it not equally so in the other?

Passing an analysis of cause and effect, which this really calls for, but which is beyond the limits of this note, I should go all the way with Professor Santayana in denying 'mechanical efficacy' to thought. But I should deny it mechanical efficacy just in order to bestow upon it its own sort of *constructive* efficacy. Also, I should be as loth as Professor Santayana to regard thought's function as 'interfering' with mechanical processes. But I should reject this view only to insist on thought's work of 'mediation' when the mechanical processes 'interfere'² with each other. In other words, it seems to me that when Professor Santayana is insisting on the 'non-interfering' and purely 'lyric' character of thought, he has in mind that stage of experience where thought has done its work, where mechanism has been established, where, therefore, any further work of thought in that situation would be an 'interference.' But it seems to me also that he is overlooking the situation in which 'interference' has already arisen among the mechanical processes, the habits and instincts themselves, and that the work of resolving this interference is the work of thought. Not, however, of thought exclusively, or as an outside force, coming in or added to the mechanical processes, but as a mode which the whole activity takes on and which the conception of 'mechanism' alone does not appear to me to cover.

Again, I think I see how every cause might be regarded as 'mechanical.' In so far as experience can fall into the form of a definite effect with its correlative definite cause, it is in the mechan-

²I am aware of the 'telic' character of the term 'interfere,' that in a purely mechanical world there would be neither mechanism nor 'interference.' But this only shows how thoroughly mechanical efficiency and constructive efficacy are.

ical form; thought has performed its work. Well-defined causes and effects are simply well-articulated habits. Antitoxine 'causes' immunity from diphtheria. But take the present status of the pneumonia problem where such a cause does not yet exist. Here thought is at work helping to construct a 'cause.' It is, of course, not working in a vacuum. Thought is the material of old habits, old causes, undergoing analysis and synthesis. Would Professor Santayana be willing to say that thought is merely predicting or prophesying the antitoxine for pneumonia, that it is having nothing to do in constituting it? If it should be said that 'the elements of the cure already exist, and thought has merely to bring them into relation to the disease,' we must reply: (1) That, even so, this makes thought pretty efficacious in constituting the cure; and (2) that such a statement involves us in the fallacy of elements apart from relations, which Mr. Bradley delights in exposing. And if we try to escape this by saying that, 'the elements have always existed, and have always been in *actual* relation to the disease, only thought has not yet discovered it,' how far are we from the condition of the poor fellow who imagined that his toothache had been cured over in another county, but that he still continued to suffer because his enemies prevented the announcement of the cure from reaching him?

Professor Santayana rightly says, that 'no one would care to maintain that poor Malthus's hard thinking caused Israel's fecundity or the congestion in our large cities.' But would he say that Malthus's thinking had nothing to do with certain reform movements of his day, or with Darwin's work which followed? May not thought be really efficacious without creating (wholly) its object, or without committing us to the doctrine, which Professor Santayana imputes to some of his critics, that 'the genesis of knowledge is (wholly) the genesis of things'? Is it not possible to describe experience in terms of thoughts and things generating other thoughts and things without regarding thoughts and things as causing each other?

Professor Santayana's characterization of his critic's view of truth as 'useful illusion' (p. 42), and his counter thesis that 'the true idea is determined by what the environment is, not by the uses which the idea of it might have,' seems to send us back to a purely representative view of knowledge and to raise rather elementary questions—those with which Locke and Berkeley struggled, such as: Just what is included in environment? From the standpoint of one making this statement, is not the environment as responsible for false as for true ideas? How tell when the idea is 'true' to the environment? What is the test of an illusion? Etc.

In conclusion, I would say that I believe that the passages in the 'Life of Reason' giving thought a constructive and constitutive character are so numerous, so convincing, and so vital to so much of his doctrines, that the reader will find Professor Santayana's instruction to take them in a Pickwickian sense a very difficult one to execute.

A. W. MOORE.

THE UNIVERSITY OF CHICAGO.

REVIEWS AND ABSTRACTS OF LITERATURE

The Philosophy of Religion. GEORGE TRUMBULL LADD, LL.D. New York: Charles Scribner's Sons. 1905. Two vols. Pp. xx + 616; xii + 590.

It is with a considerable degree of diffidence that the reviewer approaches such a task as that of estimating Professor Ladd's compendious volumes. In truth the richness of the contents precludes any attempt at exhaustive treatment, and all that is aimed at here is a cursory notice of some of the important topics of the discussion.

The treatise of Professor Ladd divides naturally into two parts: the first embracing the topics of the first volume falling under the head of the 'Phenomenology of Religion,' while those of the second embrace the problems for reflection which grow out of the study of religious phenomena. The first volume is, therefore, mainly historical and psychological, while the second is more philosophical and speculative.

Professor Ladd's general view of religion is that it is a natural and normal outgrowth of man's nature as an individual and as a race; that its evolution is part and parcel of the development of the history of the race; that its sources lie deep down in the nature of man, among the primary springs of his being; that its story constitutes an essential and inseparable element in the progressive life of humanity.

In a chapter on 'Problem and Method' the aim of the philosophy of religion is stated to be 'that critical and reflective treatment of the facts and laws of man's religious life and development which will discover, elucidate and defend the fundamental conceptions and universal truths of religion.' In pursuance of this method it is the author's purpose 'reflectively to examine the conceptions and ideals of the religious life of humanity in the light of their origin, nature and history, and of modern science and modern thought, in order to test and refine them.' In order, however, that such examination may be fruitful of the right results, it is important to determine what criteria shall be applied to the judgments of religion in order to test them. In meeting this requirement Professor Ladd identifies the religious with the value-judgment, conceived in a broad sense as including the interests of morality, happiness and beauty as well as of truth. Religion, in order to be genuine and adequate, must

conform, therefore, to the 'highest ideals of truth, beauty, righteousness and blessedness.' In so far as religion satisfies these ideal interests it meets the requirements of reason. In this sense *rationality* may be laid down as the 'ultimate test of the values of religion.' But Professor Ladd recognizes two other tests of vital importance. These he names 'humanity' and 'historicalness'; the first containing the requirement that religion shall be able to satisfy the vital spiritual demands of the needy soul in all stages of its progress in the scale of race-culture; the second involving the requirement of universality or universal adaptability to the varying spiritual wants of men. Summing up, we may say that the three great standards by which the claims of religion are to be judged are humanity, historicalness and ideality.

In dealing with the problem of the nature of religion Professor Ladd starts with the conception of 'a rational and spiritual unity of the race which has been attained by a historical development.' Taking religion as a universal element in the life of humanity, he reaches the following definition of its essential features: "The belief in invisible, superhuman powers (or a Power) which are conceived after the analogy of the human spirit; on which man regards himself as dependent for his well-being, and to which he is at least in some sense responsible for his conduct; together with the feelings and practises which naturally follow from such a belief." Aside from the details of this definition, it is clear that it recognizes the two essential elements in any consciousness or experience that is entitled to be called religious; namely, the sense of transcendence in connection with the object of religion, and the use of the analogy of selfhood as a principle of characterization. These seem to be perfectly coordinate and irreducible factors in religion from its beginning. One is, therefore, disposed to question whether Professor Ladd's representation of the earliest forms of religion as 'vague and unreflecting spiritism' is quite adequate to his definition. If the definition holds, then transcendence is essential to religion and the phrase, to be adequate, ought to be amended so as to read: vague and unreflecting *over-spiritism*. The God of the lowest savage is never a *mere* spirit, a being on the same plane with the savage himself. There is something superhuman about him. He is an over-spirit or over-soul. But we do not mean to dwell on this here. Treating his definition critically, Professor Ladd reaches the conclusion that 'religion when conceived of in conformity to its own ideals is the belief in the Being of the World as perfect Ethical Spirit; with the entire emotional and practical life brought into harmony with this view.'

Taking this definition as a text, Professor Ladd traces the origin, development and sources of religion historically as a phenomenon of race evolution, with an amplitude of scope and detail, a wealth of scholarship, a ripeness and balance of judgment and a catholicity of spirit, indeed truly admirable. Professor Ladd is a frankly avowed Christian and a loyal believer in his religion, but his adherence to Christianity does not render him inhospitable to other religions. In fact it is the scientific investigator, the philosophical thinker, rather than the partisan, that domi-

nates his judgments. Broadly, the lesson of history and anthropology is that religion has from the beginning of the story constituted an essential factor in the complex life and culture of humanity. Approached psychologically from the standpoint of the nature of man, religion has its roots in man's spiritual nature and is a normal expression of that nature as a whole. Especially is it from the standpoint of his own selfhood that man reaches out and apprehends the *Over-self* which he calls God. It is also his own self-experience which supplies him with the principles used in characterizing the Deity and bringing him within the sphere of intelligible and personal relations. History and psychology thus answer face to face and man's religion unfolds, not as a mere body of beliefs or as a cult, but as a life.

Professor Ladd treats in a discriminating way of the relations of religion to morality, art and the other elements of human culture. He recognizes the fact that religion may degenerate and become superstition; that it may and often does become an instrument of evil. But he holds that its course is upward toward the loftiest spiritual ideals of the race. And he is ready to conclude as the result of the studies of the first volume, 'that the history and psychology of man's religious experience establishes, first, the universal and permanent character of the experience itself and its capacity for receiving the critical and reflective treatment of philosophy; second, that the supreme development hitherto reached by this experience presents it as a faith that the Being of the World is perfect Ethical Spirit; and third, this supreme development has also the faith that God, this perfect Ethical Spirit, stands toward man in the actual relations of Creator, Preserver, Moral Ruler, Redeemer, Revealer of Truth and Inspirer of a spiritual life for man, which is to be after the pattern of His own Life.'

The phenomenology of religion suggests the three great problems of the philosophy of religion proper. These, as Professor Ladd enumerates them, are (1) the problem of the religious conception of the Being of the World; (2) the problem of God and the world; (3) that of man's destiny in the light of religion.

The first problem is not that of theism as it is ordinarily conceived. It is not the existence of God which is in question. Professor Ladd takes the testimony of religious faith, when it is adequately conceived and stated, to be a sufficient guarantee for the reality of its object. Likewise science and philosophy bear convincing testimony to the reality of a World-Ground of Being of the World. The real problem here is one of harmony. "We seek for a harmony between that conception of God which the highest religious experience of the race has brought into existence—the conception, namely, of God as perfect Ethical Spirit, the Father and Redeemer of mankind—and that conception of the Being of the World which is most tenable in accordance with the conclusions of modern science and philosophy." Now without following the course of the discussion here, we shall rest content with simply indicating its central thought, which is this: While religious faith demands for its satisfying

object a being who is a personal and ethical spirit, reflection finds that the ultimate reality of science and philosophy 'can only be expressed, or even conceived of, in terms of self-conscious and rational personal life.' The two conceptions thus tend to coalesce and become one. Moreover, the object of religious faith always involves a theory of reality, whereas, as already maintained, a theory of reality must in the last analysis become a theory of self-conscious and rational personal life.

Into the questions of theism, pantheism, atheism and evolution we have not space even to enter. As to evolution, however, the author regards it from the religious point of view as a process in which the divine progressively manifests itself, though in an incomplete way. "For religion," he says, "no theory of evolution can ever be anything more than a very partial and incomplete descriptive history of the way in which God has been creating the world."

Professor Ladd is also a harmonizer in his treatment of the modern issue between the natural and the supernatural. Religion can not dispense with the supernatural. For religion, 'the supernatural is God, and all the so-called natural is the manifestation of his immanent self.' The supernatural when truly conceived is the transcendent and God is both transcendent and immanent as absolute self. "It is the conception of an Absolute Self who is perfect Ethical Spirit which unites and harmonizes the two otherwise conflicting conceptions of the immanency and the transcendency of God."

Upon the interesting and illuminating discussion of the relations of God to the world as Creator, Preserver, Moral Ruler, Providence and Redeemer our space forbids us to enter. This division closes with a chapter on revelation and inspiration. The source and object of revelation is God, while its subject is man or humanity. And since God is immanent spirit making Himself known in human history, and especially so in religion, the function of revelation is coextensive with the religious experience of the race. Even the lowest religions reveal some of the divine light. In the higher religions the revelation is more complete. Revelation like religion itself is 'a progressive self-manifestation of the immanent spirit of the world.' Inspiration is the state of the subject who receives the revelation and is secondary and subordinate to it. Professor Ladd treats revelation and its accompanying category, inspiration, as broad historical phenomena. They are not confined to any particular religion. They are specialized in that they come through individualized channels. They are also specialized in the larger measure of the manifestation in some religions than in others, the supreme manifestation coming through the line of Hebrew prophets and culminating in Christ, who represents in a true sense the completeness and finality of the revelatory process.

In the last division of his treatise on the 'Destiny of Man,' Professor Ladd in a chapter on 'The Future of Religion' makes an impressive plea for essential Christianity as the religion of the future. He bases his plea not only on the spiritual content of Christianity, but also on its capacity

for variation. He says: "It is just this capacity for variation united with the persistence of its one high practical aim, and of its point of view from which to regard all that is and happens as manifestation of the good-will and redeeming love of the Absolute and perfect Ethical Spirit, which makes Christianity adapted to become in the future the religion of mankind."

The two following chapters treat of the immortality of the individual. Professor Ladd admits that no satisfactory theoretic proof of immortality is possible. The belief in immortality is an article of faith rather than of logic. And it is only in religious soil that this conviction attains to its highest vigor. The truth is, it is only as the spirit of man realizes the divine life in which it is rooted that it can have any clear hope of immortality. The spirit which realizes its rootage in the life of God comes to have a confidence that its own life, like God's own, will not perish. "The essentials of the belief in immortality for the individual can be maintained only in the form of a confidence that God, in whom every individual of the human race lives and moves and has his being, will continue to preserve and to develop the life of all those whose preservation and progress accord with his most holy and beneficent world-plan. But the rising faith of religion is that this divine world-plan will somehow show itself in the future as the redemption of the race."

Limit of space forbids any but a brief reference to Professor Ladd's very interesting treatment of the problem of evil. He regards the issue to which the existence of evil in the world gives rise as theoretically unsolvable. And it is only in the redemptive function of religion that he finds grounds of hope for its practical solution. What impresses the thoughtful reader of Professor Ladd's volumes is the thoroughness with which they canvass practically the whole field of discussion. It is difficult to decide on what ground he is strongest, whether in history, anthropology, psychology or general philosophy. In each field he treads familiar ground and pronounces sane and rational judgments.

There are a number of minor points on which the present reviewer would feel obliged to differ somewhat from the author's conclusions, but these seem relatively insignificant in comparison with the large sphere of agreement. Professor Ladd's treatise is that of a reviewer who, having gone over the whole field and practically mastered all the literature of his theme, is able to take a comprehensive view of the whole and to pronounce judgments on the various problems and issues which carry with them a certain air of finality. Of course it is not given to any mortal to say the last word on so great a theme as the philosophy of religion, but it will be many a day before we shall be again favored with so impressive an utterance as is contained in these volumes of Professor Ladd.¹

A. T. ORMOND.

PRINCETON UNIVERSITY.

¹ Near the beginning of the above notice I take occasion to suggest a criticism of Professor Ladd's characterization of the earliest forms of religion as 'vague and unreflecting spiritism.' In short, this mode of characterization

Crying. ALVIN BORGQUIST. *The American Journal of Psychology*, April, 1906. Pp. 56.

This article endeavors to explain crying as an expression of emotion, in keeping with the present-day theories. Mr. Borgquist states that as a psychological problem it is very suggestive and also that a closer investigation of the act itself may throw more light upon the general theory of emotion. The question raised at the beginning of the article is whether in the crying act we are not dealing with a fundamental mode of expression which is the basis of displeasure in its most generic form.

The article is divided into three sections. The first part deals with two hundred returns from a questionnaire which was sent out by President G. Stanley Hall to three normal schools and to the School of Ethical Culture in New York City, and with the returns from twenty special letters and questionnaires which were sent to ethnologists of the Smithsonian Institution and to missionaries among the Japanese, Samoans, New Zealanders, Maoris, etc. The questions have to do chiefly with the causes for crying among civilized and primitive peoples, the influence of age, cumulative development, symptoms and descriptions of the mental states involved in crying. The author makes a provisional classification of crying into the expression of anger, grief and joy. Each form is universal among the races of mankind. The cry of the child and the cry

clearly recognizes only the anthropomorphic factor in religion, whereas, Professor Ladd himself regards the transcendent factor, the sense of something more than and superior to man, as equally essential. In itself this failure adequately to emphasize the superanthropomorphic factor might be allowed to pass. But it seems to me that it affects more or less the author's whole conception of the course of the evolution of religion. For example, Professor Ladd demurs to the representation of the development of Judaism as a straight course from polytheism to monotheism. In this I think he is right. His failure consists in not extending this judgment to the development of religions in general. Only in exceptional instances can a straight evolution from polytheism to monotheism be made out. The existence of 'Creator Gods' in connection with lower conceptions and inferior deities ought to shed some light on the problem of the real course of the evolution. The truth seems to be that the two factors in religion—the anthropomorphic, which is the fruitful source of polytheism, and the superanthropomorphic or transcendent, which tends more strongly to monotheism, are not necessarily, or always, in fact, found together. The *motif* of monotheism lies distinctively in the transcendent factor and will manifest itself where this factor predominates; where the anthropomorphic factor predominates the *motif* of polytheism will dominate the course of the development. I am inclined to the opinion that a deeper insight into the workings of historical forces would bring out the fact of a dialectic of these fundamental *motifs* as determining the great mutations, the actions and reactions, as well as the side currents and eddies, of the developmental movements of religion. Much as I admire Professor Ladd's treatment as a whole, I can not avoid the feeling that a fresh investigation of history would lead to some modification in the directions indicated. But I put this forward simply as a suggestion and with some diffidence in view of the obscurity that besets the whole question of the course of the development of religion.

of the adult are somewhat sharply differentiated. The child's cry is more often active, due to anger, noisy, directed outward, and is essentially the expression of helplessness and the demand for assistance. The cry of the adult is passive, due to grief, subjective, and is more an expression of hopelessness. "The cry is a profound disturbance, a large reaction, and no mere shedding of tears. It occurs as the end phenomenon of a cumulative development of feeling, a physical dualism which is characterized by a low stage of energy, or a stagnation of activity, accompanied by a condition which requires an effort out of proportion to the power of the organism. In the typical adult cry this schism between the power and the need increases until the outbreak of the cry comes. Whatever else the cry may be, it is a cessation of the state of strained effort, in the direction of a total giving up. The state of adjusted motor coordinations and attention, which the individual maintains normally in all situations of life, entirely ceases; it may be said that in place of a definite adjustment of nervous mechanism a state of wide diffusion quite the opposite of adjustment supervenes, and movements are no longer adaptive. . . . The will maintains the struggle after the disintegrative processes of pain are expressed in the physical inadequacy to respond to the demands of the situation. All cries can be reduced provisionally to this typical form."

The second part of the article analyses the crying act and discusses its effect upon the individual and upon society. As in the first part the discussion begins with a consideration of the data provided by the questionnaires, but it is supplemented and amplified by an appeal to literature of all sorts, from the Bible, Darwin and Sully, to Tennyson and Wier Mitchell. Mr. Borgquist concludes that the crying act is an extremely complex one, involving the whole body. Changes in circulation, certain characteristic attitudes of the body, lump in the throat, vocalization, sob and tears are the chief physical accompaniments. The prominence of any one of these symptoms depends principally upon the age of the individual. The sob belongs particularly to the adult cry. It comes as the climax of a crying spell and remains after the other symptoms have been repressed. Tears, as belonging particularly to the grief cry, are lacking with infants. According to different observers they appear at ages varying from one to five months. Of all the elements of the cry, they are least under the control of the will. They are characteristic of the cries of young children and primitive peoples. Vocalization appears first of all in the crying acts and is characteristic of the anger, fear and hunger cries. The lump in the throat is regarded as rather a mysterious element as to both its appearance and its make-up.

The effect of crying is thought to be good by the observers, medical men and the writers of fiction. The good effect is mental rather than physical—a feeling of relief and the cessation of the nervous strain and tension. The physical effects are sometimes severe, resulting in headache, stupor, nausea, extreme weakness, etc., but the usual result is a state of physical exhaustion, rather pleasing than otherwise, which serves to

accentuate the mental relief. "Some medical opinion supports the view that crying is a helpful stimulation in the young child and that the cry resulting from grief aids a sluggish circulation and also affords some relief from a tension or overcharged condition of the nerves."

The third part of the article undertakes a brief résumé of the most prominent views in regard to crying, a study of crying as a physiological act and a statement of the author's own theory. This is the most important part of the article. The preceding parts have simply prepared the way for a statement of Mr. Borgquist's explanation of the act, which he names the 'rejection theory.' The overflow theory of the expression of crying, the resistant theory and the language theory are found to be inadequate as explanations of the crying act in all its phases. The views of Wundt, Ribot and Darwin also need qualification or amplification, according to our author. From an examination of the accompaniments of the cry from a physiological standpoint, Mr. Borgquist concludes that the movements are the result of combinations of mechanisms that belong to the digestive and respiratory systems and that the greater part of the movements are controlled by the vagus nerve. Analyzing the individual elements in the cry, especially those accompanying the adult cry, they are found to be the same movements which are involved in the rejection of food. For example, the movements of the sob—a combination of downward pressure of the diaphragm, rhythmically performed, and accompanying actions of the abdominal muscles—are identical with the movements involved in vomiting, with the exception of the movement of the stomach itself. The cause of tears is much more complex, but various movements which involve similar effects upon circulation and respiration will produce tears—namely, laughing, vomiting and coughing. The lump in the throat is obscure as a physiological event, but in vomiting and hicoughing the throat undergoes a similar change. This similarity between the crying act and the movements of rejection applies especially to the adult cry—the cry of hopelessness. "The fear, hunger and anger cries are all essentially cries for help. The adult does not as a rule cry for help, but he helps himself through this stage and then at the end breaks down—a breakdown accompanied by body prostration, sobs, tears, lamentation and physiological movements of rejection." "The acts of crying are, thus, by no means a mere symbol of the act of giving up the struggle. The movements in themselves have significance and are a means towards an end. They are physiologically cessation and even reversal of the will to live and be nourished."

A comparison of the actions of laughing and crying seems still further to support the 'rejection theory,' for though both are connected with the digestive system, laughing is the accompaniment of movements that promote digestion, and crying is a part of the process which is in its primitive form the rejection of food.

"These movements—i. e., those of crying—are, according to this interpretation, a primitive form of expression on the physical side of the mental state of displeasure. The mental act and the physical act having

never been dissociated from each other, the suggestion is made that, in more subdued form, some such actions occur as the correlate of all states of displeasure. The particular form of expression of helplessness by the cry has been preserved together with its subjective correlate, pity, as a fundamental psychosocial situation."

NAOMI NORSWORTHY.

TEACHERS COLLEGE.

Sur la compatibilité des axiomes de l'arithmétique. M. PIERI. *Revue de Métaphysique et de Morale*, March, 1906. Pp. 196-207.

This paper presents an admirable opportunity to the logician who wishes to study some of the methods prevalent in the modern logic of mathematics, without involving himself too deeply in the technicalities of the subject. It is really a reply to criticisms of M. Poincaré in the November and January numbers of the *Revue*, although no direct reference is made to them. The first part of the paper (to p. 203) is devoted to an account of the method by which the consistency and independence of a set of postulates constituting a nominal definition are proved, and the last part vindicates the possibility of the proof of consistency for the postulates of arithmetic.

The only method¹ of proving consistency which is in general use is to exhibit, within some accepted region independent of the defining postulates, an entity with respect to which all the postulates permit of interpretation together. While easy to state, this condition is difficult to fulfill in particular cases, and in the realm of pure logic it can never be fulfilled without a *petitio principii*, so we have to accept this realm as given and trust that our postulates represent a correct analysis of it.

Hilbert² has also urged that we can not define the fundamental concepts of arithmetic in terms of pure logic without a vicious circle because pure logic already involves certain fundamental arithmetical concepts such as 'class' and, in a way, the concept of the whole number. If this were true, we could no more prove the compatibility of the postulates of arithmetic than of pure logic. Pieri, however, believes that such notions as 'is a,' 'each,' 'all,' 'class,' 'contains,' etc., are not truly arithmetical and that even when we use such ideas as 'both' or 'two men' it is not necessarily an arithmetical notion which we are using, but only a perceived instance of a numerable class, and furthermore such foreshadowings of arithmetical notions must occur in the material by which we are to define numbers, on the principle that *ex nihilo nihil fit*.

The definition of whole numbers (ordered classes of similar classes) through postulates, as given by Padua, serves to enforce the point and justify the proof of the compatibility of the axioms of arithmetic. The whole method is of great interest and beauty, but while its utility is great from the standpoint of the mathematician who is anxious to discover

¹ But cf. Hilbert, *Verhandlungen des III. Mathematiker-Kongresses* (1904); *Trans., Monist*, July, 1905.

² *Loc. cit.*

with what concepts he is dealing, to the non-mathematical logician it is also stimulating through the fundamental concepts which it proposes for investigation.

HAROLD CHAPMAN BROWN.

COLUMBIA UNIVERSITY.

JOURNALS AND NEW BOOKS

ZEITSCHRIFT FÜR PSYCHOLOGIE UND PHYSIOLOGIE DER SINNESORGANE. May, 1906, Band 41, Heft 4. Abteilung für Psychologie. *Ein Beitrag zur Kenntnis der Kinderzeichnungen*: DAVID KATZ. — In drawing from models of objects, the child draws not what it perceives, but rather what it knows of the perceived object. Even in reproducing drawings this tendency is marked. How does the sensation-complex which represents the object and from which the idea of it is derived get its meaning? The author explains it as largely due to a synthesis of experiences of touch and sight, which mutually correct one another. *Ueber die Beziehungen von Zeitschätzung und Bewegungsempfindung*: ERICH JAENSCH. — Two movements of the same length are judged to be equal if the times required to make them are equal. Our criterion of the length of movements is, therefore, not innervation-sensations, so Loeb, but time. The qualitative changes in sensations produced in movement render quantitative comparisons difficult, and it may be questioned whether there are changes in intensity at all. *Ueber Täuschungen des Tastsinns*: ERICH JAENSCH. — Preliminary report of a study of illusion of filled and empty space, with special reference to time of movement as criterion for estimates of distances. *Literaturbericht*.

Lectures on the Method of Science. Delivered at the request of the delegates for the Extension of University Teaching during the Summer Meeting, at Oxford, England, August, 1905. Lecturers: Thomas Case, Francis Gotch, C. S. Sherrington, W. F. R. Weldon, W. McDougall, A. H. Fison, R. C. Temple, W. M. F. Petrie, T. B. Strong. Edited by T. B. Strong. Oxford: The Clarendon Press. 1906. Pp. viii + 249.

Lodge, Oliver. *Easy Mathematics, chiefly arithmetic; being a collection of hints to teachers, parents, self-taught students and adults, and containing most things in elementary mathematics useful to be known*. New York and London: The Macmillan Co. 1905. Pp. xv + 436.

Segal, Joseph. *Ueber die Wohlgefälligkeit einfacher räumlicher Formen (Inauguraldissertation-Zurich)*. Leipzig: Engelmann. 1906. Pp. 77.

Thorpe, T. E. *Joseph Priestley*. English Men of Science. Edited by J. Reynolds Green. London: J. M. Dent & Co. 1906. Pp. viii + 228. 2s. 6d. net.

Zschimmer, Eberhard. *Eine Untersuchung über Raum, Zeit und Begriffe vom Standpunkte des Positivismus*. Leipzig: Engelmann. 1906. Pp. 54.

NOTES AND NEWS

A TEXT-BOOK of elementary mathematics by Sir Oliver Lodge bears the quaint title of 'Easy Mathematics, chiefly arithmetic; being a collection of hints to teachers, parents, self-taught students and adults, and containing most things in elementary mathematics useful to be known.' *Science* in the course of its review makes the following comment and quotation: "When a man like Sir Oliver Lodge writes on arithmetic we naturally expect an unusually high motive. In the present case this motive is set forth in such forceful terms as follows: 'The mathematical ignorance of the average educated person has always been complete and shameless, and recently I have become so impressed with the unedifying character of much of the arithmetical teaching to which ordinary children are liable to be exposed that I have ceased to wonder at the widespread ignorance, and have felt impelled to try and take some steps towards supplying a remedy. The object in writing the book has been solely the earnest hope that the teaching of this subject may improve and may become lively and interesting. Dulness and bad teaching are synonymous terms. A few children are born mentally deficient, but a number are gradually made so by the efforts made to train their growing faculties.' To read an arithmetic written in a breezy style yet thoroughly sane from cover to cover is a surprisingly interesting experience for most people who try it. While those who are familiar with elementary mathematics may not learn any new facts by reading this book, yet there will probably be few who will not have a more cordial attitude towards the subject."

MR. ROWLAND HAYNES, assistant in philosophy at Columbia University during the winter of 1905-6, has been appointed associate in philosophy at the University of Chicago for the ensuing year. He is to have courses in philosophy, ethics, psychology and logic during the absence in Europe of Associate Professor A. W. Moore.

DR. J. E. WALLACE WALLIN, instructor in philosophy at Princeton, has accepted the appointment of professor of psychology and pedagogy in the Pennsylvania Normal School, at East Stroudsburg.

DR. HARVEY CARR, of the University of Chicago, has been appointed instructor in psychology in the Pratt Institute of Brooklyn, to succeed Dr. Irving King, who goes to the University of Michigan.

DR. W. K. WRIGHT, of the University of Chicago, has been appointed instructor in philosophy and psychology in the University of Texas, to succeed Dr. Warner Fite, who has accepted a call to the University of Indiana.

ASSOCIATE PROFESSOR ALEXANDER MEIKELJOHN, dean of Brown University, has been made professor of logic and metaphysics.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

SPACE AND REALITY¹

THERE are two aspects to the space concept. These have not been sufficiently differentiated in the past, *viz.*, the series character of the concept on the one hand and the void or non-being character on the other. The latter, or the ontological, aspect was the first, naturally, to be developed. It is involved in the concept of motion and interaction. It is the answer of the atomists to Parmenides and Melissos. Parmenides argued that non-being is unthinkable, therefore there can be no motion. The atomists argued that there is motion, therefore non-being must be real; and hence assumed atoms and the void as their two ultimate principles. In Empedocles and his followers the theory of pores as conditioning interaction of things both upon each other and upon our sense-organs might have opened up the problem of the relativity of knowledge, had the implication been seen by the author.

The other aspect of the space concept, that of series or form, could come into prominence only as the Copernican change took place from things to the mental processes and laws that make things what they appear. In so far as the serial idea is present in ancient times, as among the Pythagoreans, it is ontological; and against this ontological serial conception of space and time Zeno hurled his weapons. With Aristotle the concept of a figured space is upheld as against the void, but the boundary of one body with reference to another is still an ontological boundary. Since Kant it has been generally agreed that the space concept is adequately expressed in serial terms; and hence the ideality of space logically follows. That the ghost of the void, so long laid, should rise again must make the hair of the boldest Kantian fairly stand on end. But the thesis I

¹ This paper was read before the Western Philosophical Association, at Madison, April 21, 1906. I want here to thank the members of the association, especially Professors Tufts, Lovejoy, Stuart, Rebec, Bode, Stoops, Farley and others, for their full discussion, which has enabled me to state some points, perhaps, a little more clearly.

want to maintain in this paper is the ideality indeed of serial space, but the reality of space in a deeper sense as non-being. The Kantians in their anxiety to apotheosize their own intellects have neglected certain surds, the effect of which has been to make the whole result ghost-like and unreal. In the following I wish to say a few words about serial or ideal space, and then I shall proceed to the proofs for ontological space.

I. IDEAL OR SERIAL SPACE

First, a word as regards the presuppositions or the *a priori* character of the space intuition. It was this particularly that attracted the attention of Kant; and this priority to experience furnishes his most important proof for the ideality of space. The thundering dogmatism of the Kantian arguments for the 'transcendental ideality' of space is almost ridiculous. It is not my purpose here to discuss his arguments. The first one is evidently a mere circle and amounts to saying that if you locate things in a space system, you do thus refer them. But who ever would suppose that the baby locates things in a space system. Neither do the rest of us, except as we are steeped in a certain philosophical and psychological theory. As regards the second argument, we can surely think qualities such as tonal qualities without extension. As regards the apodictic certainty of geometry, this has resolved itself into a mere matter of hypothetical logic. As far as space being one is concerned, there are as many space perspectives psychologically as there are individual consciousnesses. The 'one space' is a matter of social agreement. And so far as its infinity is concerned, that is not a matter of intuition, but of ideal construction, as every concept becomes infinite when you abstract from empirical data. But what is the use of wasting powder on a dead dog?

Since Spencer the *a priori* has been translated into biological instead of psychological terms. We do not inherit forms, but a certain kind of nervous structure. What Spencer did, however, was merely to translate. He still supposed that the axioms of geometry are intuitions in us due to inherited neural tendencies. It would not take a Locke to prove that the evidence for this is lacking. What we inherit is not axioms, but a tendency to develop certain coordinations in the growth series of the organism in obedience to certain stimuli, intra- and extra-organic, the continuity and order of the developmental series, whatever the content may be, being predetermined by natural selection.² Into whatever terminology in the end we may translate our biological terms, it at least can not be

² For the author's treatment of the *a priori*, see his article, 'Mind as Instinct,' the *Psychological Review*, March, 1906.

ideational terminology. Axioms belong (to use Baldwin's admirable distinction) to our social heritage, the tradition of the race which each generation imitates and assimilates, not to our biological heritage, even if we do learn them before we are twelve years old.

And now a word about psychological space. Since Lotze a great deal has been made of local signs; and the psychologist's imagination has shown no end of ingenuity in constructing space maps. In all the important modern authors a great deal of space is devoted to how a space might have grown up. However ingenious these attempts may be and however important pedagogically in robbing psychology of its 'soft' character, I have come to suspect that these constructions are largely artificial, due to a certain psychological atmosphere, rather than an account of the actual genesis of our space coordinations and space feelings. I, for one, can not discover in normal activity any such map, either tactual or visual. I can, to be sure, by a voluntary effort construct in imagination such a picture or map of my body and then localize within it; and I can see how the compulsory construction of such a map in order to understand the so-called psychology of space, especially with sufficient faith in authority, might make such a map a permanent part of our mental furniture. But such a construction is, at most, artificial shorthand, a convenient equivalent or model for describing the actual coordinations. As an account of genesis it is gross mythology, which lacks even picturesqueness.

The ingenious account by Wundt, Titchener and others of the economy of consciousness based upon the above artificial psychological furniture, is of course equally *a priori*. I can not discover even a word except as it is artificially produced or called forth as a result of expectancy. When I catch myself in the act, I do not find anything of the kind. If you say that I have had this content, but that it has disappeared, that at least ought to be proved. The recollection of a previous existence and most any other psychological theory of genesis might be proven in the same way.

At any rate our theories of space must be rewritten largely in biological terms. The coordination of the reactions of the human infant, as in the animal, is primarily an instinctive matter, with the difference that while in the chicken, for example, the coordinations develop largely in response to intra-organic stimuli before birth, in a human being extra-organic stimuli play a much greater rôle. But the coordinations in either case, such as those of walking and the various sense-organs with each other, are organic adaptations. Instinctive tendency with trial and habit is all the machinery we require. If there is any consciousness in this early development, it is probably of the concomitant kind, except as pleasure-pain may serve

to indicate the success or failure of the instinctive tendency. In that case it really becomes an organic factor. In the embryonic stage, in which animal coordination is pretty much completed, we have at least no evidence of consciousness, much less of images or map-building, though the simple organic machinery serves the same purpose. At any rate it is time to stop substituting the might-have-been of later ideational activity for the simple early stages. The chemical terminology of tropisms suggested by Loeb is at least a truer statement of infant reactions and coordinations, as well as many of the adult's for that matter. When we are in a stage to reflect, and so to collect evidence, the principal coordinations which make up our space world have become a motor affair, with at most certain sensational signs.

Again, as regards geometrical space, this is simply a matter of logic. If we choose to make certain assumptions, a logical system can be built upon these. It may be of one, two, three or n dimensions; it may presuppose continuity or discontinuity; it may be qualitative or quantitative. Mathematical space is purely a matter of ideal suppositions and construction, knowing no limits except the laws of thought. It has as many axioms as we choose to have; they may be less or they be more than those of Euclid, though as a matter of nomenclature the question may be raised as to how far the term geometry should be applied to such constructions. They are simply a display of poetic imagination in an abstract field. They are no more the concern of the philosopher than any other products of poetic inventiveness, 'Alice in Wonderland' for example. The attempt to construct a universe out of mathematical concepts is one of the most ludicrous as it is one of the most pervasive of philosophical errors. We need only mention the Pythagoreans, Plato and the Cartesians, not to speak of recent fads.

It may be questioned how far non-Euclidean geometries stand for any special content foreign to the ordinary man. Mathematicians like to mystify us with space worlds altogether foreign to the common understanding. But Poincaré has shown recently that so-called non-Euclidean spaces can always be translated into terms of Euclidean geometry. While Poincaré makes that an argument for the validity of the non-Euclidean systems, it might with better logic, I think, be shown that this preestablished harmony is due simply to the fact that the other systems in so far as they stand for real content are merely abstractions from the Euclidean, and that the mystical bewilderment of four or more dimensions is not due to a peculiar content but to a confusion of terms, dimension being used for certain selected logical relations which have nothing to do with the space concept.

Even making a contradictory or nonsensical assumption, however.

may lead to important logical consequences altogether apart from the validity of the assumption. If you assume that the moon is made of green cheese, logical consequences can be deduced entirely apart from the falsity of the original statement. So, if you assume that in a different universe two plus two equal five, a system of mathematics can be constructed accordingly. The same is true of a space of four dimensions. Whether conceivable or not, if we choose to assume it, a system of geometry can no doubt be deduced from it. It may be no enrichment of truth, yet the logic itself may be unimpeachable. The same may be said of the completed infinite. If you admit infinite quantities, then all our ordinary calculations, based upon finite values, are upset. The half is no less than the whole, and dropping out any number of steps does not affect the number of terms in the series. But while such juggling may impress the uninitiated, the assumption that there are any but finite facts or values should never have been admitted; and then the contradictions would never have occurred. There are series, indeed, which can not be completed and whose sum is predictable; but this is because of the law which governs the series and which is finite, and not because of completing the, by definition, incompletable. If you look at the quantitative and definable side of the series, dropping out terms does indeed make a difference, because here you are dealing with definite content and not juggling with terms merely. So in the series $1 + \frac{1}{2} + \frac{1}{4}$ etc. = 2, if you drop out the first term, the series does not equal 2, but 1, and every term dropped thus makes a definite assignable difference. If terms make no difference, that is no sign that you have completed the infinite, but that you have ceased to talk sense.

The critical modern study of geometry, however, if it has thrown no new light on the nature of things, has had an immense value as a solvent in destroying not only mathematical dogmatism, which was the longest to hold out against the critical spirit, but dogmatism as regards other eternal verities as well, which pointed to the axioms of geometry as their type and their warrant alike. The old bulwark of *a priorism* has at last been shattered.

The physical scientist selects among these mathematical models such as will enable him best to manipulate or anticipate his facts. Mathematics thus furnishes a convenient, though artificial, framework for science. Whether this framework is real or not is no concern of the astronomer or physicist. It is at least a convenient tool in marshaling and utilizing his facts.

But the question may be raised: How does mathematics come about its ideals: its straight line, circle, etc.? It was this mystery that converted Plato to the theory of preexistence. It has always played an important part in the theory of innate ideas. All we can

say here is that such a limit as the straight line no doubt has its instinctive or motor basis. It is part of the law of economy and conceivably at least has played a part in race survival, for 'the shortest line,' which is Euclid's motor definition, must, other things being equal, have been economic and given an advantage in pursuit and escape. For us, however, these ideals are posited as limits in the service of the constructive will and have no reality except as we posit them.

Whatever may be the psychological or biological genesis of space, and whatever may be the actual content in connection with our space-coordinations, it may still be insisted that what space *means* is a perspective of coexistent perceptual values. In the service of our purposes, Münsterberg might say, the will constructs its perspective of nearer and farther. It arranges the various perceptual contents with reference to each other within a scheme for its own convenience. This scheme may be a subjective perspective, as when the ego simply arranges the contents with reference to itself as center. In that case nearer and farther have reference to our own subjective purposes or will-attitudes. Or the scheme may be the result of social agreement, a convenient description in the service of purposes which we must share, and such in the end are all the practical purposes of life. In this case mathematical models are substituted for our individual imagery; loci are divested of their purely egoistic reference; different astronomers in different parts of the world, with totally different psychological settings, can direct their telescopes to the same point in the heavens, and different geographers can cooperate in piecing out the map of the earth.

But, whether the point of view be ego-centric or social, such a perspective scheme is phenomenal and not, *as such* at any rate, real. The map of England with its dots and colors, the astronomer's squares and circles, are convenient equivalents for the actual relations or distances, but no one would maintain that they are the real thing. So far from the perspective map and the real space being identical, the ideal construction does not occupy space at all nor does the real will that constructs. Even when perceptual pictures are used, as in the case of the map, the scale has nothing to do with the truthfulness of the map.

With such a space construction I have no quarrel so long as its phenomenal character is recognized. We do find it convenient for certain purposes to construct such a system of artificial shorthand for the real interactions of things. What I would insist, is that such a conception *means* something more than the phenomenal equivalents with which it deals; that it serves to symbolize real externality or distance which the will must acknowledge and for

the sake of which, or to adjust itself to which, it invents its system of artificial equivalents. Such a space conception, then, just because it is convenient, must point to some characteristic of the real in the very necessity for such spreading out, how phenomenal or artificial soever the ideal equivalents may be.

The most brilliant of modern idealists has striven to give this perspective space a real existence in his final conception of reality. In his 'New Exposition of the Science of Knowledge,' space, for Fichte, becomes the 'permanent, absolute contemplation,' "which, however, presupposes itself as absolutely being to itself according to the demonstrated law of the reflection of consciousness. It is the on-itself-reposing, firm glance of intelligence, the resting immanent light, the eternal eye in-itself and for-itself." And again, if you can stand any more such language: "The substantial, solid and resting space is, according to the above, the original light, before all actual knowledge, only thinkable and intelligible, but not visible and not to be contemplated, as produced through freedom." The construction of space is secondary, 'is a taking hold of itself on the part of light, a self-penetration of light, ever from one point and realized within knowledge itself; a secondary condition of light, which, for the sake of distinguishing it, we should term clearness, the act enlightening.' And truly it needs enlightening. But, with such light as I have on the Fichtean conception of space, it becomes for him the self-intuitive eternal system of truth or, which here amounts to the same, reality. It is not merely the type of the eternal, but it is the eternal; not merely the valid, but the real. Perhaps Fichte is right that if we are to translate space into terms of one eternal self-conscious contemplation such must be its meaning. But that loses whatever of meaning space has for us. It reduces it to a mere spaceless eternal view-point.

JOHN E. BOODIN.

UNIVERSITY OF KANSAS.

A NEW LOGICAL DIAGRAM

THE diagram is a non-essential in logic; but the increased tendency on the part of comparatively recent writers towards its use would seem to indicate that it has a decidedly practical illustrative and educational value. Unfortunately all diagrams which have as yet been proposed labor under some more or less serious disadvantage. It is the purpose of this paper to present a diagram which, it is hoped, will prove to be a step towards the desired ideal.

The demands which a satisfactory diagram must meet are few, but vital:

First, there must be a complete symmetrical one-one correspondence between the elements of the diagram, whatever they may be, and the elements of the given logical universe. These latter elements consist of all of the possible combinations of the classes considered, or of their symbolic representatives. This condition demands that the diagrammatic elements, like the symbolic ones, be mutually exclusive and collectively exhaustive. If the diagram is to be of practical utility, it must, by the very nature of its construction, secure complete one-one correspondence automatically for any number of classes; thus relieving the user of all responsibility as to whether every symbolic subclass has its graphical representative in his diagram or not: not a simple matter when it is considered that successive addition of classes involves successive doubling of the number of subclasses.

Secondly, if the diagram is to be practically valuable, it must be simple in construction and appearance, free from any possible source of confusion, readily adaptable to any desired modification of conditions and, in general, its manipulation must be easy, quick and reliable.

Lastly, as the number of classes considered increases, the diagram must keep pace with the increasing symbolic notation with perfect correspondence and simplicity; in one word, it must be 'simply-extensible.'

The shortcomings of the usual diagrams are familiar to all. The Eulerian circles, at their best, are limited to the case of three-class representation, for which, it is true, they serve admirably. The four-ellipse system for four-class representation, as proposed by Mr. Venn,¹ is confusing at first. A five-ellipse system fails to represent five-class combinations; and Mr. Venn's modification creates more confusion than ever. These difficulties were recognized by Mr. Venn, for he questions the utility of such diagrams for extension beyond the five-class case.

The diagram of Dr. H. Marquand² comes nearest to satisfying all the conditions; there is no question as to its extensibility and its perfect correspondence; but it has the disadvantage that the elements of a single class are in discrete groups, even in the simplest possible cases, and this involves unnecessary complexity.

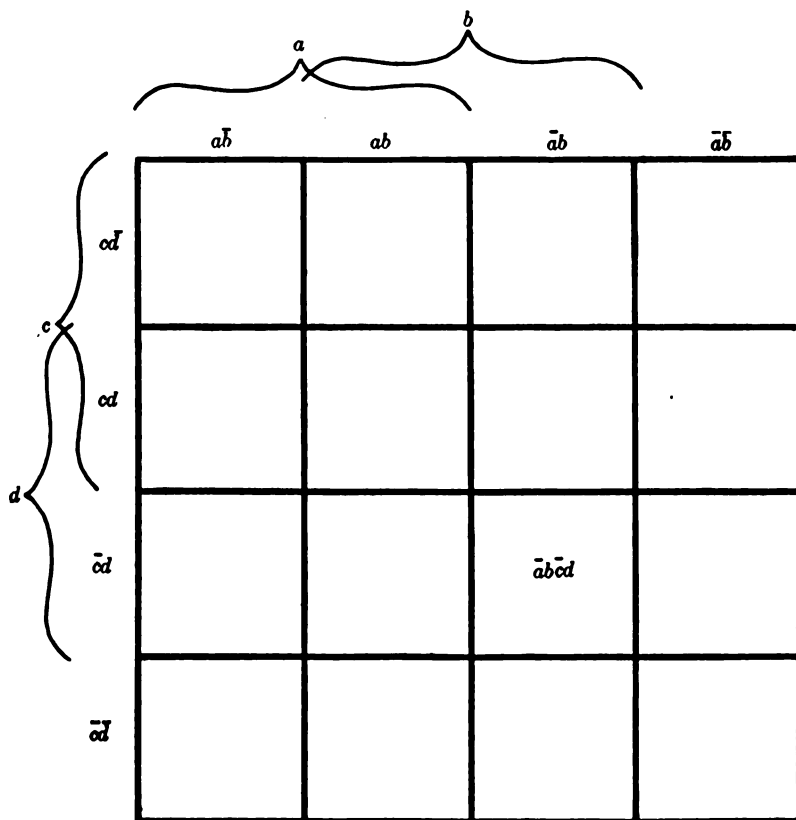
In the design of the following diagram the attempt has been made to utilize the bisection principle and class-group units in a multiple self-representative series so that the result may have the good features of each method without its faults. The unit chosen

¹ 'Symbolic Logic,' p. 116.

² *Philosophical Magazine*, October, 1881.

is the four-class diagram,³ and the geometrical form of it is that of the square, since this figure lends itself most readily to unit combinations of the kind desired; and it has been so subdivided as to be adapted to class representation up to and including seven classes; so that the unit itself will serve the purpose for all ordinary cases. At the same time its manipulation is not so complex as to make it in any degree confusing to the student, and its colligation for extension is of the simplest possible kind.

FIG. 1.



THE FOUR-CLASS DIAGRAM.

The class $\bar{a}\bar{b}\bar{c}d$ is at the crossing of strips $\bar{a}b$ and $\bar{c}d$.

Let the logical universe be represented by a square³ (hereinafter referred to as the 'primary' square), divided by vertical lines into four vertical strips, and by horizontal lines into four horizontal strips.

³ See Fig. 1.

Let class a be represented by the first and second vertical strips, counting from left to right, taken together; and class b by the second and third, taken together.

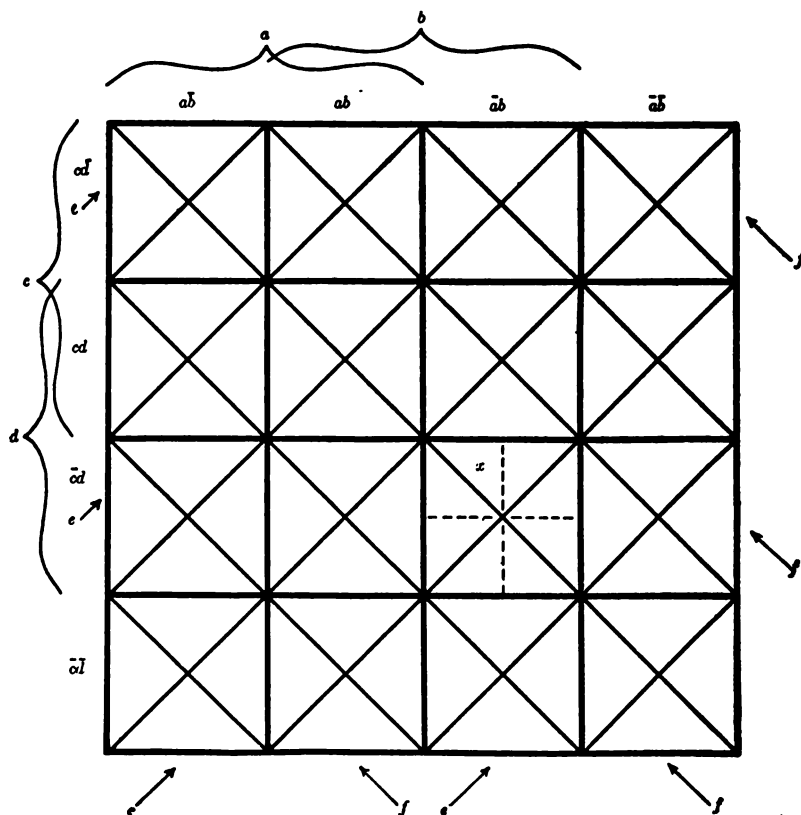
Let class c be represented by the first and second horizontal strips, counting down, taken together; and class d by the second and third, taken together.

Then the individual vertical strips will represent in order $a\bar{b}$, $a\bar{b}$, $a\bar{b}$, $a\bar{b}$; and the horizontal strips will represent $c\bar{d}$, $c\bar{d}$, $c\bar{d}$, $c\bar{d}$.

Any combination of these pairs of terms may be found at once with great ease, as the particular 'secondary' square representing the logical product under consideration will be at the intersection of the two strips which represent these term-pairs.

This figure is easily constructed, and offers no possible chance for confusion; and the symmetry of the indicative notation makes it easily remembered, and simple in use.

FIG. 2.



THE SEVEN-CLASS DIAGRAM.

"... $bcdefg$ is at 'x,' and is located by steps in this order: $\bar{a}b$, $\bar{c}d$, e , \bar{f} , g .

This figure may be adapted to three-class representation by making *c* a zero class, i. e., erase the upper half of the diagram: and to two-class representation by making *d* also a zero class, leaving only the bottom row.

To represent the relations of *five* classes, construct the diagram as before for any four of the five classes. Then in addition add to the figure all possible diagonals⁴ in *one* direction. Consider these diagonals as sides of diagonal strips, and let one of the two sets of alternate diagonal strips represent the fifth class.

Each secondary square is now subdivided into two triangles, each of which will have the same class-product of *a, b, c, d* as before; but one of them has this product combined with *e*, and the other, this same product combined with \bar{e} .

The process of locating any of the thirty-two possible subclasses is identically the same as for a four-class product, augmented merely by the choice of two specific triangles to meet a fifth-class demand.

For *six-class* representation,⁵ add to the primary square *both* sets of diagonals, and let one of the two sets of alternate diagonal strips represent the fifth class, and one of the two sets of opposite-diagonal strips represent the sixth class.

Each secondary square is now subdivided into four triangles. Classes *a, b, c, d* determine the secondary square as before; classes *e, f* determine which of the four specific triangles is to be taken; and the proper subdivision is thus located easily, quickly and with certainty.

A further subdivision of the secondary square by lines through its center parallel to its sides (shown dotted in a typical square in Fig. 2), together with the convention that of the subdivisions of the four triangles the right or upper half, as the case may be, shall represent *g*, and the other half \bar{g} , renders possible the clear representation of the 128 subclasses of the seven classes *a . . . g*; and the tracing of any given class-product to the proper secondary square, proper triangle and proper half of the triangle is a simple, short and certain process.

To represent more than seven classes, replace each of the secondary squares in the fundamental four-class diagram by a four-class diagram as a unit. The resulting figure⁶ contains all possible eight-class combinations, each of which may be located in two similar steps; one to locate the secondary square, now itself of primary form, and one to locate *its* proper secondary square. These latter

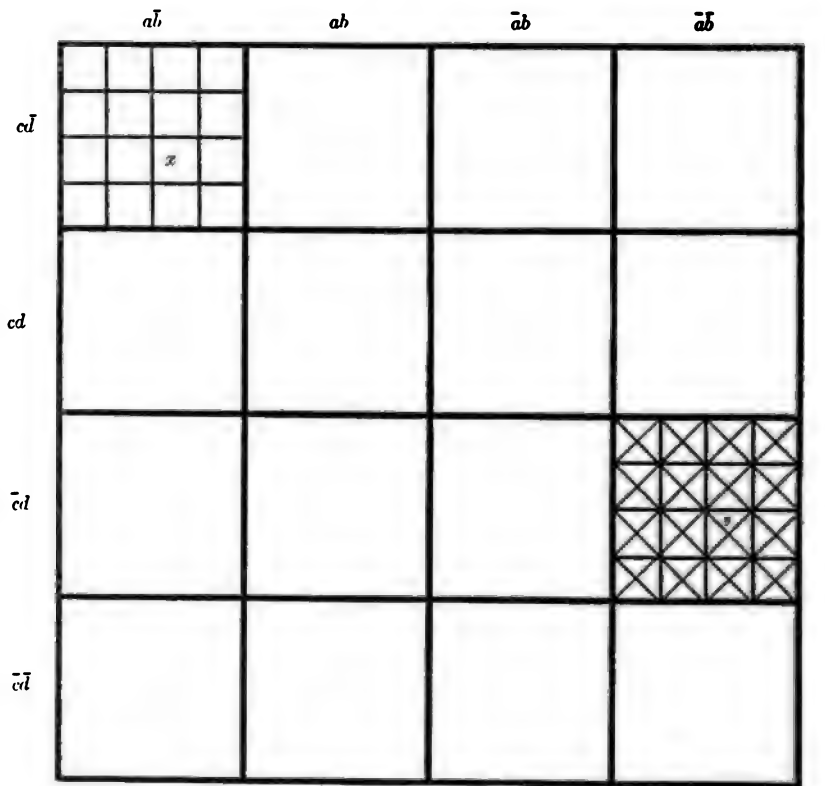
⁴ Diagonal bisectors have been introduced in preference to horizontal or vertical ones, to avoid confusion with the existing strips.

⁵ See Fig. 2.

⁶ See Fig. 3, *a*.

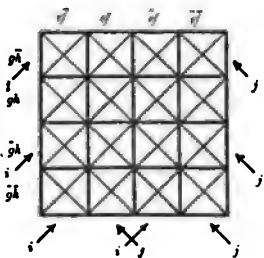
squares will be referred to as 'tertiary.' Modifications of the secondary square unit as already described for five, six or seven classes¹ will adapt the entire figure to representation of nine, ten or eleven

FIG. 3.



KEY UNIT.

THE EXTENDED DIAGRAM.



The class $\bar{a}\bar{b}c\bar{d}e\bar{f}g\bar{h}$ is at 'x,' and is located by $\bar{a}\bar{b}$, $c\bar{d}$, $e\bar{f}$, $g\bar{h}$.
The class $\bar{a}\bar{b}c\bar{d}e\bar{f}g\bar{h}i\bar{j}$ is at 'y,' and is located by $\bar{a}\bar{b}$, $c\bar{d}$, $e\bar{f}$, $g\bar{h}$, i , j .

classes; after which, replacing the tertiary square by the four-class unit, and its successive modifications, will extend the diagram by a process which is clearly recurrent, and indefinitely continuous.

It will be found a practical advantage for very complex cases

¹ See Fig. 3, y.

to use, for each four-class set, a typical unit as a key, on which its particular four-class notation is marked, rather than to confuse the primary square by a superabundance of class terms; and also on account of the fact that by the use of such a key the actual construction of the complete diagram need be carried out in extreme detail in those portions only to which the conditions of the problem under discussion apply.

From the method of its construction it is evident that this diagrammatic scheme furnishes perfect correspondence for any number of classes. The four-class unit, with its modifications, is simple; and on account of the recurrent character of the extension process, with the use of key units, the manipulation of the diagram never can become more complex than in the seven-class case.

WM. J. NEWLIN.

AMHERST COLLEGE.

DISCUSSION

METAPHYSICS, SCIENCE OR ART

IT is not strange that the imaginative dignity, as contrasted with the scientific worthlessness, of most metaphysical speculation should suggest the essential identity of this philosophical discipline with art rather than with knowledge. The summary verdict which many a student feels compelled to pass upon the great historical systems, such as Plato's, Spinoza's and Schopenhauer's, is: Magnificent, but—untrue. And though narrowness of historical vision, or close personal or literary contact with a living thinker, may lead to enthusiastic discipleship in some distinctly modern doctrine, nevertheless an impartial judgment must ascribe to such doctrine precisely the defects, in greater or less measure, of its predecessors.

If we enter somewhat more into detail, the kinship of metaphysics with art becomes clearly evident. Both are 'self-expression,' *i. e.*, the manifestation of a certain type of personality; both display a ruling idea and a disposition to ignore or pervert facts which do not accord with this idea; both give emotional satisfaction, and this not as a psychological accessory, such as may appear in connection with scientific research, but as an essential feature of the product. What we have presented to us in the metaphysical scheme, as in the work of art, is an imaginative construction which we may appreciate by temporarily detaching ourselves from our surroundings. The world is continually changing in ways which we do not appreciate; art gives us things which do not change, or which change in ways which we

do appreciate. And so idealism, for example, aims to make us appreciate the world as we appreciate a picture, or a musical theme, or a bit of our own thought-life. We sometimes enthusiastically call such appreciation 'understanding,' or 'knowledge,' just as Abt Vogler ejaculates, "'Tis we musicians know.'" But the fact is that our state of mind is decidedly emotional, that it is not real *knowledge* at all, since our well-instructed fellows reject it in favor of some other theory—but is importantly subjective. Historically, logically and psychologically, then, this resemblance between metaphysics and art is obvious.

Furthermore, that metaphysics is not science, in the ordinary usage of the term, is too evident to be disputed. Scientific conclusions, it is true, enter into metaphysical speculation, but they do not impart their own certainty thereto. Many are the scientific facts about matter, and these are used by both idealist and materialist, but whether matter is fundamentally lumps, or energy, or the phenomenal expression of ideas, we can not say—except in moments of enthusiasm, or as a frankly personal opinion.

Such reasons as the foregoing would induce us to deny to metaphysics the title of knowledge, and to restore its dignity by placing it among the arts. And this appears to be Dr. Gordon's thought.¹ It would seem, however, to do a certain injustice to the intellectual aspects of metaphysics, an injustice which suggests the following comments.

The purpose of metaphysics is the purpose of science, not the purpose of art. The metaphysician aims at the discovery of truth; the artist at the production of beauty. The one constructs an idea which, he hopes and believes, correctly represents reality; the other makes a reality which expresses an idea. If a painter said, "Compare my canvas with my model and observe its accuracy," both he and the observers would ignore its primary esthetic significance, for copying, as such, is not art; but this is precisely what the metaphysician does and must say. He may be an artist, and may consciously or unconsciously introduce the art spirit into his thinking,

¹ See this JOURNAL, Vol. III., No. 14. Her assertion that 'metaphysics, from the standpoint of its practical effect, might be classed more fitly as an art than as a science' (p. 365) is ambiguous. The qualifying phrase suggests that there is another standpoint, and her use of the term 'science' leaves it unclear whether or not there is another kind of knowledge, to which metaphysics might lay claim. I suppose, however, that the important test for her is pragmatic, that her estimate of the epistemological value of metaphysics is based on its practical effects. Of course if the question concerns simply the existence of an art-character in metaphysics, it must be answered in the affirmative, but if there is an implication that metaphysics is not knowledge in any sense whatever, there is room for discussion.

but his purpose is to make a mental copy of reality in its important features and principles, and the thing has metaphysical worth only as it is a correct copy.² Neo-Platonism and Fichteanism have remarkable esthetic features, but what we, as metaphysical students, seek to learn is the extent to which they correctly set forth the structure and mode of development of reality. Any such scheme is tested by the question, Is it true? Indeed, it aims to tell the truth whether pleasant or not, and the honesty of its purpose is rewarded by the supreme and peculiar satisfaction which belongs to the pursuit of truth. The artist, on the other hand, frankly seeks to please, and his works, *as art*, must submit to test by standards of beauty, whatever these are. So great an artist as Browning is justly criticized for the disagreeable roughness of his versification. Of course particular works of art may be judged from other points of view, as in the case of moral criticism of realistic fiction, but such criticism is not esthetic. Hence while metaphysics may possess art qualities, these are not its primary motive, and therefore do not serve to identify it essentially with art.³

Passing to the psychological analysis of metaphysical concepts, *e. g.*, unity, possibility, etc., into motor attitudes and functions, the question before us is: Does such analysis show that these concepts are esthetic rather than scientific? Our answer must meet the following difficulties. Many of these concepts are common property of philosophy and science. Does the difference of usage have a correspondent difference of motor expression, and if so, what is this difference? It must be generic, to match the distinction between art and science, and hence we would naturally expect to find it, as Dr. Gordon suggests, in the emotional tone of metaphysical ideas. This theory, however, is not well supported by introspection, since speculation, upon the nature of time or space for instance, may proceed without other emotional consciousness than satisfaction in the search for truth, while on the other hand the botanist's delight in discovering the unity of plant species may be strongly felt. It is probably true, as I have already said, that there is a peculiar satisfaction in the completion or possession of an all-embracing scheme of things, but such satisfaction does not appear identical with the appreciation

² I am aware that the word 'copy' gives offense to many epistemologists, but this consideration seems final: If a thought and the object of that thought are distinct in any sense whatever, then the term, figurative if you please but indicating a fact, is justified.

³ "The ultimate aim of the scientist is always to convince some one, that of the artist to interest and move some one" (p. 307). But metaphysicians, almost without exception, have been teachers, and so would seem to belong to the first class. My personal contact with such teachers convinces me that their primary aim is not to interest or move except in an intellectual way.

of beauty, nor sufficient to place metaphysics among the arts rather than in the domain of science. Accordingly, Dr. Gordon's analysis and simple reference to the James-Lange theory do not explicitly support her contention.

The assertion that metaphysical doctrines make 'no difference immediately for overt action,' but do make 'a difference in sentiment, mood or disposition' (p. 370) is puzzling. A mood or disposition expresses itself definitely in conduct, so that overt-ness is hardly available as a criterion, but marks rather our subjective limitations of perception. Apart from this fact, however, metaphysical beliefs often result directly in open action. Animism produces multitudinous acts; Christian Science—which is certainly metaphysics rather than science—has a very definite practise; religious worship, or the abstinence from it, may be the outcome of genuine metaphysical inquiry. Moreover, there is a very well-established opinion that science itself depends upon metaphysical presuppositions. When we examine our daily lives we find that many of our acts are, not works of art, nor mere discharges of emotion, nor applications of scientific facts, but expressions of metaphysical instinct, or results of metaphysical speculation. That is to say, we have genuine reasons, good or bad, for what we do; and these reasons are corollaries of our metaphysics. It may be said that they are emotional in character, and this is true, but it is also true that all conscious motives are more or less emotional, and therefore that the presence of emotion does not disprove the connection between metaphysical belief and conduct. Whether action follows from a broad or fundamental principle that we call metaphysical, or from a narrow, specialized principle that we call scientific, depends upon circumstances, but in either case there may be a genuine intellectual basis. Hence the distinction on grounds of practical effect seems questionable. And finally, the charge that Augustine's solution of skepticism and Kant's ethical prescription have no result upon overt action seems to me in the plainest contradiction to facts. Do we not know that a respect for law in general may issue in conduct with stern and terrifying effect?

Metaphysics, consciously pursued, is an attempt to be scientific on a large scale. The magnitude and profundity of its task differentiate it in many ways from science, and, in particular, offer a temptation to substitute an imaginative symmetry, with details which look well, for a strict and tedious adherence to facts. But the purpose of speculation is knowledge, and if it is carefully done it secures some truth. Its resemblance to art is accidental and superficial; its kinship with science is generic and fundamental.

BERNARD C. EWER.

NORTHWESTERN UNIVERSITY.

REVIEWS AND ABSTRACTS OF LITERATURE

The Nature of Truth. HAROLD H. JOACHIM. Oxford: Clarendon Press. 1906. Pp. 182.

Of all the animals that creep and breathe upon the earth man is the most iconoclastic—because he is also the most iconoplastic. He is ever engaged in forming ideals for his delectation and worship, and continually discovering his worship to be idolatry and shattering his own creations.

The reason for this absurdly wasteful procedure is always the same. The ideal has been constructed, the idol has been set up, too uncritically. Too little care has been devoted to the foundations of the ideal to build upon them an enduring structure. The requirements which an ideal must satisfy have been ignored. Yet these requirements are simple. They may be formulated as follows:

1. The ideal must be attainable by a thought which starts from our actual human standpoint.
 2. When constructed it must be relevant to actual human life.
 3. The ideal must be realizable by the development of man's actual life.
 4. Yet it must have 'independent' authority over actual human life.
- Or, more briefly, the ideal must (a) *be an ideal for man*, and yet (b) *have authority over man*.

Unless the first condition is complied with, it is evident that the ideal will be the arbitrary creation of a fancy which uses the actual only as a jumping-off place into cloudlands and dreamlands. And any ideal, which is arrived at thus *per saltum*, is bound to reveal its illusory nature so soon as an attempt is made to *get back* from the ideal to the actual, i. e., to *apply* the ideal to human life. We then find that we *can not* get back from the standpoint of the ideal; with its glamour in our eyes the actual seems hideous and distorted, alien and unintelligible. Whereat, enraged, we may feel tempted to pronounce it radically false and vicious and to build out our 'ideal' into a veritable paradise of fools.

Unless the second condition is complied with, our ideal becomes non-functional, and therefore really meaningless. A real ideal for man must be applicable to the world of man's experience. An ideal which is not so applicable is no ideal for man, even though it might entrance angels and redeem absolutes. And clearly an ideal which has been reached by a jump is pretty certain to prove thus inapplicable. As it was not reached by a gradual approach from the actual, it can not return to the actual world and enlighten its gropings. It owed its being to invalid fancy; it owes its application to an irrational fiat.

Unless the third condition is complied with the ideal loses its compelling power. The impossible is no source of obligation, no center of attraction; nor is it rational to aim at its attainment. The notion that an ideal would not be an ideal if it were realizable is a false inference from the fact that ideals are progressive, and expand as actuality ap-

proaches the level of what once seemed the ideal. It overlooks the fact that throughout this whole process the ideal has to be conceived as essentially realizable. If this belief in its possibility failed us, our devotion would at once be stultified.

It is, however, to the fourth condition that the other three have usually been sacrificed. Ideals have been unnaturally projected into a non-human sphere, they have been rendered inefficacious and impossible by being dissociated from human life, in order to guarantee their independence and to enhance their authority. That this procedure is self-defeating has already been explained. It may be shown also to rest on radically false conceptions of the authority and 'independence' of ideals. Their 'authority' must not be conceived as imposed on man; it must be freely constituted and recognized by him. Nor can their 'independence' be conceived as absolute; it can not mean absence of relation to human life. It can at most be relative, a tentative simplification of the actual facts, an exclusion of this or that unimportant circumstance, of this or that discrepant desire, of this or that discordant claim. But to set up an ideal *wholly* independent of terrestrial conditions, human psychology and individual claims, to argue that because experience shows that *some* such features may be set aside, all may in a body be excluded *a priori*, seems merely to exemplify the fallacy of 'composition.' It should never be forgotten that in any actually working ideal the 'independence' is functional, and strictly limited to the sense and extent which efficacy requires.

I

These reflections have not been wholly inspired by Mr. Joachim's interesting and instructive essay, but they find in it abundant illustration. It is always an affecting spectacle to behold the good man conscientiously practising the idol-breaking art upon the idols of his soul, but the total failure of Mr. Joachim's investigation of the nature of truth, which he himself confesses in such handsome terms (pp. 171-180), might have been predicted by any one who had examined the functioning of human ideals.

Mr. Joachim has courted failure by the fundamental assumptions which pervade his ideal of truth.

1. He has assumed that the 'critical' question is out of date. Nowhere does he betray any consciousness of the need for asking, "How can I know all this that I have assumed? How are the facts assumed compatible with my knowing them?" He has not in consequence raised the question how his ideal was arrived at.

2. He has thereby been enabled to assume an impossible standpoint, without realizing until it was too late that nothing could be said from it that was in the least degree relevant to the facts of human life. Assuming that 'the nature of truth' concerned 'the character of an ideally complete experience,' and not the actual procedures of human minds, he inevitably lays it down that "there can be one *and only one* such experience; or only one significant whole, the significance of which is self-contained in the sense required. For it is absolute self-fulfillment, *absolutely self-contained* significance, that is postulated; and nothing short of abso-

lute individuality—nothing short of *the* completely whole experience—can satisfy this postulate. And human knowledge, not merely *my* knowledge or *yours*, but the best and fullest knowledge in the world at any stage of its development—is clearly not a significant whole in this ideally complete sense. Hence the truth is—from the point of view of the *human intelligence*—an ideal, and an ideal which can never *as such*, or in its completeness, be actual as human experience.”¹

3. Having assumed such an ideal, he is compelled to abstract as far as possible, from everything human, real and concrete. But ultimately this abstraction proves impracticable, and when at last his conception of truth is brought into contact with the fact of human error, its breakdown is as irretrievable as it was inevitable: for it is the collapse into its interior emptiness of the bubble of a false ideal under pressure from the real it had scouted.

That Mr. Joachim has really made all these assumptions can be made plain in his own words. Thus, (1) he describes on p. 178 his assumption of the standpoint: “That the truth itself is one and whole and complete, and that all thinking and all experience moves within its recognition and subject to its manifest authority; this I have never doubted.” Perhaps if he had been more willing, not necessarily to doubt, but at least to examine, this assumption, he would not have been forced to doubt so much in the end. For it was decidedly uncritical thus to rule out the question of whence came the features in the ideal he postulated. It was also by definition that he ruled out the conception of truth as a *human* ideal. Hence it was quite superfluous to state in the preface that he was not going to discuss the humanist conception of truth. He could not: from his point of view the humanist position was invisible, and was bound to seem ‘a denial of truth altogether.’

From Mr. Joachim's standpoint human knowing could not possibly appear as anything but an inexplicable falling away from the serenity, purity and perfection of ‘the Ideal,’ as ‘unreal abstractions’ which it is his duty ‘to do his best to discredit’ (p. 59). Or, as he says more fully (pp. 167–8), “The differences of *this* and *that* knowing mind—a *fortiori*, the confused mass of idiosyncrasies which together distinguish *this* ‘person’ or ‘self’ from *that*—are recognized only to be set aside and, if necessary, discounted. They are accidental imperfections, superficial irregularities, in the medium through which truth is reflected; limitations in the vessels through which knowledge is poured. They are, so to say, bubbles on the stream of knowledge; and the passing show of arbitrary variation, which they create on the surface, leaves the depths untroubled—a current uniform and timeless. My and your thinking, my and your self, the particular temporal processes, and the extreme self-substantiation of the finite ‘modes’ which is error in its full discordance:

¹ Pp. 78–9. The ideal described is clearly not an ideal for man. And, naturally, Mr. Joachim finds the resources of human language inadequate to describe it. Cf. p. 83, n., where he declares that though he calls it ‘experience,’ the word is ‘unsatisfactory,’ and that he uses it only because ‘God’ would be ‘misleading,’ and ‘the Absolute’ and ‘the Idea’ have become bywords.

these are incidents somehow [!] connected with the known truth, but they themselves and the manner of their connection are excluded from the theory of knowledge."

The theory of knowledge, then, 'studies the known truth qua timeless and universal' (p. 168), and the judgments of science can not be "concerned with the concrete thinking of the individual mind qua 'this' or 'that,' qua differentiated by the idiosyncrasies developed through its particular psychological history" (p. 93), 'in all the accidental and confused psychical setting' (p. 115).

Or lastly and most frankly (p. 118), "I do not inquire how the logician can pass from the 'psychological individual' to the 'logical subject,' from *this* actual thinking (with all its psychical machinery and particular setting) to the thought which claims truth as affirming universal meaning. The logician, I am convinced, never really starts with *this individual thinker* in the sense supposed; and, if he did, the passage from this psychological fiction to the subject of knowledge would be impossible."

It is clear that Mr. Joachim at any rate has never started with 'this individual thinker,' but equally so that he never gets to him. He has assumed his 'logical' standpoint, and never doubts, even when it proves unworkable, that the discrepancy of psychical fact is mere irrelevance and confusion. "We have been demanding all along," he says (p. 82), "an entire reversal of this attitude" (of starting from the actual). "In our view it is the Ideal which is solid and substantial and fully actual. The finite experiences are rooted in the Ideal. They share its actuality and draw from it whatever being and conceivability they possess. It is a perverse attitude to condemn the Ideal because the conditions under which finite experiences exhibit their fragmentary activity do not as such restrict its being, or to deny that it is conceivable, because the conceivability of such incomplete expressions is too confused and turbid to apply to it."

II

What, then, is this standpoint of the Ideal? Page 76 tells us that "Truth in essential nature is that systematic coherence which is the character of a significant whole. A 'significant whole' is an organized individual experience, self-fulfilling and self-fulfilled. Its organization is the process of its self-fulfillment, and the concrete manifestation of its individuality."

Brave words, if only the standpoint of the 'the Ideal' could be maintained, and the 'individual thinker' be wholly dismissed from the inquiry! Unluckily he can not.

The tree of knowledge can not be guarded against human profanation, even in the logician's paradise, once it is 'somehow' revealed to man. Nay, the logician is ultimately driven out by the diabolical machinations of 'the dual nature of human experience,' which has 'its universality and independence and yet also its individuality and its dependence on personal and private conditions' (p. 29). "Truth, beauty, goodness are timeless, universal, independent structures; and yet also it is essential to them to be manifested in the thinking of finite subjects, in the actions

and volitions of perishing agents" (p. 163). They "appear in the actual world and exist in finite experience . . . and their life (at least on one side of itself) is judgment, emotion, volition—the processes and activities of finite individuals. Truth, if it is to be *for me*, must enter into my intellectual endeavor," however 'independent' it is 'of the process by which *I* come to know it' (p. 21).

No wonder 'human experience' is 'paradoxical' (p. 23), and in the end its 'dual nature' is too much for 'the Ideal.' It has no room for error; and yet error inexplicably exists. Thus error becomes the 'declaration of independence' of the finite, something utterly 'unthinkable' 'where that which declares is nothing real and nothing real is declared' (p. 163).

And so 'the ideal' of 'coherence' 'suffers shipwreck at the very entrance of the harbor' (p. 171). "It must render intelligible 'the dual nature of human experience'" (p. 170); it fails to meet 'demands' which 'both *must be* and *can not be* completely satisfied' (p. 171). And so the whole 'voyage ends in disaster, and a disaster which is inevitable' (p. 171).

It would be ungenerous in those who declined to commit themselves to the ill-found craft which Mr. Joachim has gallantly navigated to foredoomed failure to crow over this catastrophe; but it is permissible to point out *why* it was inevitable from the first.

The whole ideal, despite its protestations of 'concreteness' and aspirations towards a 'self-fulfilling individuality,' rested all along on an unjustified abstraction from the most essential features of the only knowledge and truth we are able or concerned to attain and examine. As Professor Stout says, "The only knowing with which we are primarily acquainted is knowing on the part of individuals, of empirical, historical selves." All actual truth is human, all actual knowing is pervaded through and through by the purposes, interests, emotions and volitions of a human personality. Mr. Joachim had no right to treat these facts as distorting disturbances: they are the roots of the tree of knowledge. He had no right to treat knowledge as if it were impersonal: the 'personal equation' is never really eliminated even in science, and in philosophy the attempt to abstract from its all-pervasive influence stands self-condemned. He had no right to assume that to take our knowledge in its full concreteness would be fatal to its 'objectivity'; he should have studied how men proceed from individual judgments to social agreements about truth, and ultimately construct ideals which are intended to guide our aspirations, but are at once bereft of their significance when they lose touch with human knowing.

Mr. Joachim has had, of course, to pay the penalty of these uncritical assumptions. He has failed to describe anything at all resembling the actual processes of human knowing. He has failed equally to portray the operations of science. He has failed even to render his abstract ideal self-supporting: it crumbles under its own weight; for all its claim to

absoluteness it possesses no authority; for all its aspiration to 'coherence' it does not cohere, even in itself.

These defects, moreover, are closely intertwined. Because he has assumed the absolute standpoint and abstracted from the personal context of every judgment, he can never seize the actual meaning of any judgment. He can not see that it lies in the use of the judgment, in its relation to a cognitive end, in its adjustment to a particular case, in its satisfaction of a need. By ignoring (what is obvious from the opposite point of view) that meaning depends on purpose and demands application, he has restricted himself to potential meaning, and moves in a world of impotent phantoms. It is only in such a phantasmagoria of depersonalized, hypostasized abstractions that truth can appear timeless and unalterable, that judgments can *bear meaning in isolation* (p. 90), and *are* possessed of a 'truth' which *they* 'affirm' and 'demand' (p. 108-9), that thoughts move and live and expand out of space and time (p. 176).

III

The truth is that the 'concrete universal' of Hegelism is in no respect what it pretends to be. It is not concrete, because it is a rank abstraction, having manifestly abstracted from the process of knowing which it claims to represent. It is not a true universal, because it is not particular and repels particulars as irrational and confusing. Whereas *the 'universals' which are really functional and are used in actual knowing are always particulars, i. e., they are applied to a 'this' in a 'here' and 'now.'* Hence the Hegelian 'universal' never occurs either in ordinary or in scientific knowing. The 'universals' ('laws') of the sciences live only in their application to particular cases; they try to formulate the habits of things, and are intended to be rules which guide us in our treatment of them. It is, therefore, the less important half of the truth to assert (p. 110) that 'scientific thought moves in universals' and that "in the science of botany a judgment of perception like 'this tree is green' finds, *as such*, no place." For the universals are *applied* universals, and the science of botany would be valueless if it did not deal with the behavior of particular trees, and it would not value the more abstract judgments if they did not show their 'pragmatic' power by applying to a greater number of 'particulars.' Our scientific procedure gives no sanction whatever to the notion that universals which can not be applied have any value.

The Hegelian 'universal,' however, not merely misrepresents the scientific 'law'; it no less distorts our vision of the 'particular.' An abstraction itself, it constructs the bogey of 'the individual mind,' presumably in order that something more monstrous than itself may deter us from acknowledging plain facts. But its 'individual mind' is a figment, formed by expunging all values from the concrete mind. In actual minds the values are all present, *as psychical facts*, with the ideals and the idiosyncrasies, all capable of contributing harmoniously to the conservation of the individual life. There is no occasion or temptation, therefore, to oppose 'particulars' to 'universal,' and to reject any of the mind's

actual contents as 'accidental,' 'irrelevant' or 'confused.' For one, that is, who really starts from the 'finite experiences.' But it is only an amiable delusion of Mr. Joachim's to imagine that he has tried to do so (p. 115). His assumption of 'the ideal' has really incapacitated him from describing human experience as it is. He has in reality dis severed it into a part which is (to his thinking) superhuman, and another which is despicable, if not bestial. But the two will not cohere, nor even come into contact, and between them his theory of knowledge founders.

In other words, Mr. Joachim has contrived to reopen an old wound that was never really healed. In every absolutist theory of knowledge, when it is really thought out to the end, there is and must be a dualistic chasm gaping between the 'human' and the 'absolute' aspects of truth. Across this chasm there is no bridge; but the mystic often fancies that he can be wafted across it on the wings of desire. Mr. Joachim is too sceptical and too honest to play such tricks, but the old mistakes have conducted him to the old *impasse*. Once more the ideal has been severed from its roots in the real; once more it has been incited to transcend our experience; once more it has refused to return to earth and to redeem it. It is vain to protest (p. 62) that 'a universal is not another entity existing alongside of its particulars.' He himself has made it such, by refusing to conceive it as human and as humanly inhabiting them.

If he will not conceive the universal as a human instrument, as existing in and for its use, if he will insist that it must be 'independent,' it *must* be so exalted as to lose all real significance for us. Thus the old Aristotelian protest against the Platonic idea has still to be reiterated against the Hegelian universal. If it holds aloof from human knowing, it manifestly fails, because it becomes a vain duplication, which has no meaning or interest for us: if it essays to deal with human knowing, it becomes an inhuman monster which tries to absorb the human and, still more manifestly, fails, and then revenges itself by abusing and depreciating us. In neither case can the human and the ideal be harmoniously combined, or their 'duality' overcome. But this duality was produced by the initial assumption of a non-human standpoint; if the inquiry had commenced by investigating how 'truths' are verified and errors detected, no 'duality' need ever have arisen to bar the way.

IV

I have devoted myself so far to the discussion of Mr. Joachim's standpoint, partly because strict scrutiny of fundamentals is what philosophy at present stands in need of most, partly because it really implies the highest praise that could be bestowed on Mr. Joachim's essay. For it means that having assumed his standpoint, he has worked out its implications with consistency and rigor to the bitter end. Indeed, it seems to me that of all the writers of the Hegelian school he has most firmly grasped their central problem, most honestly faced their difficulties, most clearly shown what their doctrines really mean and to what they really lead. That his conclusions should be welcome to all (or even to any) of the members of the school is not, perhaps, to be expected; but it is no

slight service to philosophy to have set the issue in so clear a light. Other philosophers, who stand remote enough to enjoy the light of Mr. Joachim's criticism without being scorched by its fire, will appreciate that service at its true value. The humanists, in particular, will derive much instruction from the uncompromising and almost inhuman expression Mr. Joachim has given to an attitude diametrically opposed to theirs. They will note with satisfaction how close is the parallel, and how complete the antithesis, between him and them on all essential points, and regard this as testimony to the inner consistency of rival views whose divergence springs from different answers to the same question. They will rejoice that Mr. Joachim has unequivocally said a multitude of things they had long suspected their opponents of believing, and desired to see stated in cold print. Nor will they have any reason to regret the negative outcome of Mr. Joachim's labors. On the contrary, the more extensively it is recognized as the final breakdown of intellectualistic attempts to explain 'how knowledge is possible' without regard to the actual functioning of knowledge in human life, the better they will be pleased.

In view of the fundamental value of Mr. Joachim's work it seems ungracious to allude to secondary blemishes. But it is not easy reading, and the author has provided no analysis of the argument and only a scanty index. It is a pity that instead of starting from the simplest form of the 'correspondence-with-reality' view of truth, he has altogether omitted to mention it. For it is in its *sensationalistic* form, as referring thoughts to the test of perceptions, that this view is most plausible and least inadequate. Indeed, apart from ulterior interpretations, it is plainly descriptive of processes which actually occur in our knowing, and is not so much false as incomplete. Again, one feels that the most consistent attempt to work out the notion of the 'independence' of reality on intellectualistic lines, *viz.*, that made by Mr. Bertrand Russell and Mr. G. E. Moore, is rejected rather than refuted on pp. 51-5. At any rate, the objections urged against the theory seem to press equally upon that to which, in spite of its collapse, Mr. Joachim remains attached: the fundamental assumption is the same for both, *viz.*, that experiencing ought not to make a difference to the facts; so is their fundamental difficulty, that of getting this 'independent' truth into relation with human minds after it has been postulated.

This, indeed, would seem to be the conclusion of the whole matter: when we find the logic of Mr. Joachim and Mr. Russell failing just where that of Mr. Bradley had failed, and just where its failure was predicted,³ when we find logicians plunging deeper and deeper into the quicksands of scepticism, when inference becomes a 'paradox' and a mystery comparable with those of theology, when our reasoning has to be treated as either 'irrational' or extra-logical, and when we contrast the fact to which Professor A. W. Moore has justly drawn attention,⁴ that all the time our actual knowledge is growing and progressively ameliorating the

³ Cf. 'Humanism,' p. 48.

⁴ 'The Functional *versus* the Representational Theory of Knowledge in Locke's Essay,' Ch. 1.

lot of man, is it not high time that we should stop and bethink ourselves of a possible alternative to a course which is both fatal and ridiculous? Has not the time come when Kant's 'Copernican change of standpoint' might at last be put through seriously, and when truth, instead of being offered up to idols and sacrificed to 'ideals,' might at length be depicted in her human beauty and simplicity?

F. C. S. SCHILLER.

CORPUS CHRISTI COLLEGE, OXFORD.

Il sentimento imperialista. GIOVANNI AMADORI VIRGILJ. Milan: Sandron. 1906. Pp. xxii + 340.

In this volume the author attempts a 'psychosociological' study of the imperialistic tendency manifested in the German and Anglo-Saxon peoples. The aim of the study is simply to present in full detail the actual sources and factors, economic, political and emotional, which make the phenomenon of imperialism what it is.

In an introduction an analysis of 'collective mentality' and a description of the author's method are given. Considerable preliminary attention is given to the relation between individual and social ideas and 'energies.' The body of the special study falls into three parts: (I.) The essence of imperialism, as a phenomenon; (II.) The causes of imperialism; (III.) The power of imperialism.

What merits the attention of the psychologist in this work, whose theme belongs to the sociologist, is the purely psychological form of description and analysis. The author uses the traditional trinity of feeling, idea and will together with Ribot's concept of 'affective logic' as criteria for distinguishing social factors and types of social activity. The elaborations indulged in may strike the reader as superfine and unnecessary, in so far as explaining the nature of the imperialistic tendency is concerned. These may well be pardoned, however, when one notices the keen descriptions of the really important factors, such as the Teutonic temperament, the growth from nationalism through racialism to an as yet unattained humanism, the changes in ethical and religious concepts, and so on.

The writer describes the general tendency of imperialism thus: "Firstly there arises the simple desire of empire, then the concept of altruism (as an affective logical reinforcer or justification), and, finally, the concept of religion appears" (p. 68, etc.). Each stage is induced by special causes, both intellectual and economic. Imperialism is the opposite of socialism, being the feudal idea in a new form. Inasmuch as so many politicoeconomical factors are involved in demonstrating these conclusions, detailed criticism would be out of place here. The author's facts and theories about the social mind, however, have considerable interest for the psychologist, while the analyses of ethical problems arising in and through imperialism are highly suggestive to the ethicist.

WALTER B. PITKIN.

COLUMBIA UNIVERSITY.

JOURNALS AND NEW BOOKS

VIERTELJAHRSSCHRIFT FÜR WISSENSCHAFTLICHE PHILOSOPHIE UND SOZIOLOGIE. March, 1906, Band 30, Heft 1. *Ein Beitrag zur Erkenntnis der sozialwissenschaftlichen Bedeutung des Bedürfnisses* (pp. 1-48): S. KRAUSS. - The position is carefully developed that the basis of the materialistic interpretation of history is an uncritical conception of causation corresponding to equally uncritical notions of individuality and environment. After all, the essential condition of demands or needs is the individual, who is the independent source of his own acts. Each cultural need, again, has an independent status, so that on it the rest depend, in ways genetically determined. *Ueber die Bedeutung des erkenntnistheoretischen Solipsismus und über den Begriff der Induktion* (pp. 49-71): R. v. SCHUBERT-SOLDERN. - Every object stands both in a solipsistic and in a causal order. The solipsistic view is essential to all epistemology, and is not escaped by Schuppe, Avenarius or Mach. It distinguishes, therefore, every philosophy and thereby infects the root concepts of all the so-called inductive sciences. *Die introspektive Methode in der modernen Psychologie* (pp. 72-114): H. REYBEKIEL-SCHAPIRO. - An analysis is given of the views of Brentano, Comte, Erdmann, Behmke and Wundt, with criticisms. In general the author distinguishes between inner perception and self-observation, and discredits the former because of its fragmentary character, the latter because of its falsifying tendency. Both are to be supplemented by experiment, and with it constitute the only psychological method of observation. *Besprechungen*: W. Schallmayer, *Vererbung und Auslese im Lebenslauf der Völker*: S. R. STEINMETZ. W. Pater, *Plato und der Platonismus*: übertragen: A. AALL. H. Gomperz, *Die Lebensauffassung der griechischen Philosophen und das Ideal der inneren Freiheit*: A. AALL. *Selbstanzeige*: L. Dilles, *Weg zur Metaphysik als exakter Wissenschaft*, II. *Zeitschriften*.

Baldwin, James Mark. *Thought and Things or Genetic Logic. A Study of the Development and Meaning of Thought. Vol. I. Functional Logic, or Genetic Theory of Knowledge.* London: Swan, Sonnenschein & Co.; New York: The Macmillan Co. 1906. Pp. xiv + 273. \$2.75.

Cassirer, Ernst. *Das Erkenntnisproblem in der Philosophie und Wissenschaft der neueren Zeit.* Erster Band. Berlin: Bruno Cassirer. 1906. Pp. xiv + 608.

Frost, Walter. *Der Begriff der Urteilskraft bei Kant.* Halle: Max Niemeyer. 1906. Pp. 136.

Hooper, Charles E. *The Anatomy of Knowledge: an Essay in Objective Logic.* London: Watts & Co. 1906. Pp. 226. 3s. 6d.

Luquet, G. H. *Idées générales de psychologie.* Paris: F. Alcan. 1906. Pp. vii + 295. 5 fr.

Schiaparelli, G. *Astronomy in the Old Testament.* Authorized English translation, with many corrections and additions by the author. Oxford: The Clarendon Press. 1905. 3s. 6d. net.

NOTES AND NEWS

THE *Athenæum* for August 11 summarizes as follows an article of exceptional interest on one of the Congolese tribes, which appeared in a recent number of the Belgian Royal Geographical Society's journal and which has now been separately republished: "The Upotos live on the northern bank of the Congo, between Ikonmango and Dobbo, or between the twentieth and twenty-second degrees of east longitude, and the writer, M. Lindeman, resided among them for several years. His description proves that he studied their customs and folk-lore very closely. The Upotos seem to have long resided in the region now occupied by them, and they show a marked disinclination to quit it. They live chiefly by fishing, and one of the first things to strike a visitor is that certain fish are reserved for the men, others for the women, and yet a third kind for the slaves. These slaves are chiefly slaves by birth or men sold for their debts. They are well treated, and opposite Iringui is an island in which all slaves who are incapable of working are allowed to reside by themselves. One form of semi-servitude is called *lisokko*. This is when a man, not having money to buy a wife, sells himself to a chief to obtain one. The offspring of such a marriage become the property of the chief. One very curious custom is that a man may never look at his mother-in-law. If he does, he has to pay her a fine of 30 to 50 *mitakkos*, which are brass rods equal to a half-penny. Neither must the mother-in-law look at her daughter's husband, but M. Lindeman omits to mention the penalty. Children are treated with great kindness, and in fact spoiled. Their mothers do not chastise them even if the children strike them. Among the duties of the women is that of shaving their husbands. The chief amusements are singing, dancing, and wrestling matches between villages. The victors are painted red; so also are corpses before burial, but in the case of women it is not the bodies, but the coverings in which they are wrapped, that are so colored. Circumcision is practised. The Upotos believe in life after death, and in spirits. They think their dead relatives and friends are always watching them, although they can not be seen. Their god is named Libanza, and M. Lindeman gives a long and interesting description of Upoto mythology. Their account of the origin of the white and black races is curious. Libanza sent his son Tserenga on earth to see what the races of mankind were doing. Among Europeans he was well received, so he gave them a white skin and much knowledge, but among the Africans he was badly received, so he left them black and stupid. One of the myths entertained by this people is that the Congo and its many tributaries were created by the tears of the tribes weeping for a favorite chief long ago. The moon is supposed to be an immense ship engaged in conveying the souls of the dead to Libanza; and the stars are the eyes of the dead, who sleep during the day. As a rule negro myths have seemed devoid of general interest, but M. Lindeman has made a most interesting incursion into those of the Upotos."

THE *Nation*, September 6, contains the following: "Admirers of Thomas à Kempis can not fail to be interested in J. P. Arthur's translation of his lives of Gerard Groote and his followers, and his 'Chronicle of Mount St. Agnes' (London: Kegan Paul). Mr. Arthur has called his rendering of the lives, 'The Founders of the New Devotion,' the New Devotion being the name given to the religious movement started in Holland by Master Gerard Groote (Gerard the Great) in the latter half of the fourteenth century. Gerard's object was the restoration of piety and morals, then sunk grievously low, and partly with this view he and his disciple, Florentius Radewin, planned the formation of societies known as 'Brotherhoods of the Common Life,' the members of which were to live together, but without taking vows, to support themselves by their own labor, and to devote much time to prayer and work for the poor. Sisterhoods were also formed on the same pattern. That these communities might not lack advice and assistance, regular monasteries were also founded. Among the earliest were those of Windesheim and Mount St. Agnes, near Zwolle. This latter à Kempis entered as a young man, having received his previous training at the town school at Deventer, where Florentius and the house of the Brotherhood of the Common Life exercised great influence. A special interest thus attaches to Thomas's account of the Brothers and their institutions, and it is not a little surprising that his works on the subject have only now been rendered into English. The Rev. S. Kettlewell in his 'Thomas à Kempis and the Brothers of the Common Life' contented himself with translating selected passages."

WE quote the following from the *New York Evening Post* of September 18: "The rector of the past academic year in Berlin, Professor Hermann Diels, at the close of his official career as head of the university, delivered an interesting discourse on the subject of the International Mission (Aufgabe) of the University. His text was furnished by the exchange of professors inaugurated between America and Germany during the speaker's official year. Professor Peabody, of Harvard, who went to Berlin, had declared that a foreign lecturer could do justice to himself and his subject only if permitted to speak in his own language. With this Professor Diels fully agrees, especially should the lectures be on literary and kindred subjects. The revival of Latin as an international language of learning is, for practical reasons, too, out of the question. Nor does Diels think that the Esperanto, or indeed any mechanically contrived language, will ever answer this purpose. He holds that there is but one feasible solution of the problem, namely, the recognition on perfect equality of the three leading modern tongues, German, English and French. Such a linguistic 'Dreibund' the speaker pleads for as an acceptable *sine qua non* for the perfection of the scheme of exchanging professors, and for solving the international mission of the modern university."

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

PSYCHOLOGICAL OPPORTUNITY IN PSYCHIATRY

THE subject of the relation of psychology to psychiatry is now claiming the attention of many alienists who appreciate, speaking clinically, that the chief disturbances in the insane are mental. Physicians are anxious to learn what psychology can teach regarding normal mental processes and to acquire the methods which psychologists have found useful in the investigation of these mental conditions. This drift toward psychology is due not to any philosophical leanings, but largely to the practical need of more accurate knowledge of patients for diagnostic and prognostic purposes.

This practical need is felt very strongly in some quarters because it is realized that psychiatry is at present in a stage of development comparable to that of general medicine twenty or thirty years ago. There is no agreement among psychiatrists regarding either the nomenclature or the mode of determining diseased conditions. Cerebral alterations, causes, symptoms and outcomes, these singly or in groups, have been suggested as methods of deducing the types of mental diseases. This has led to innumerable classifications, sometimes differing very slightly, which have lacked stability because they have been solely for purposes of grouping. Until within recent years the understanding of the psychical changes in any particular case or series of cases was deemed to be of little importance in comparison with the classification. The asylum idea was predominant. When, however, the hospital point of view began to be the more prominent, exclusive concern for a scheme of classification lagged, and there was a rise of interest in more knowledge about and in the significance of the changed mental conditions.

Because of his concern for the welfare and cure of his patients the psychiatrist must use all possible means for the detection of the functional changes, including the progress of the disease, and of any anatomical variations. The usual clinical methods, although they have given and will probably continue to give sound and valuable results, are not sufficient. They must be supplemented by special studies in all lines along which there is any prospect of valuable

returns. Anatomy, chemistry, physiology, psychology, must and will be levied upon to furnish their quota to the solution of the various problems that confront the alienist. The anatomical pathologist, the chemical pathologist, the physiologist and the psychopathologist are needed for the collection of material which the psychiatrist may use and correlate with his own less specialized findings. Not the least important of these detailed studies is that of the psychologist—of whose assistance the psychiatrist stands in especial need to-day—of the primary and secondary symptoms, of the course and of the factors influencing for better or worse the many diseases of the mind.

The problems of the physician in regard to the insane differ from those of the psychologist, as has been suggested above. The distinction has often been made that the psychologist is interested in the description, interrelation and genesis of mental states, while the psychiatrist is interested primarily in diseases, their causes, descriptions and cure. The psychiatrist is not so much concerned with the careful dissection of mental conditions as he is with the surface examination to determine disease forms. For him, the question is not 'what has given rise to any particular psychical symptom,' but, rather, 'what is the cause of the insanity.' Furthermore, his interest must largely be in therapeutic problems: 'what will make the insanity give way to a condition of sanity?' and 'what will influence adversely or for health the individual who is mentally diseased?' In the attempts to solve the medical problems psychology will be called upon for assistance, the methods of the psychological laboratory will be used and the psychologist will have an opportunity to cooperate with other investigators.

To psychologists this means opportunities for investigation in a field which has hitherto been closed to them. In the case of the psychological theorists who insist that only normal adult human beings can give us data for the proper understanding of consciousness, the subject of psychopathology in relation to normal psychology will not appear to be of much importance. To the majority of psychologists who are willing to investigate 'mind' wherever and whenever it can be found, and who are desirous to gather mental facts and to explain them, the study of the abnormal classes, particularly of the insane, will give some new points of view and will help toward the solution of some old problems. I venture to assert that the study of the mentally abnormal will be of as great value to normal psychology as the study of the effects of extirpation and hyperactivity of various parts of the body has been to physiology.

For the proper understanding of what may be obtained from a study of the insane one must give up any preformed notions regard-

ing the class. More particularly is it necessary to rid one's self of the popular idea that the hospitals are filled with psychical prototypes of physical prodigies. It is just as difficult to find a mental condition comparable to a sea serpent or a mermaid, a phoenix or a hydra, as it is to catch such monsters. The grotesque and spectacular are such only from an uncritical point of view. It is also important to abandon any tendency to think of and to use the terms 'confusion' and 'delusion' as the equivalents of 'insanity.' Not all insane are deluded or confused, and not all cases of delusion and confusion are insane. Moreover, the insane who are confused or who have delusions are not the least interesting and instructive to the mental specialist.

The field for study will be the better understood if we appreciate that the insanities are diseases which are characterized, largely if not solely, by exaggerations and diminutions of normal mental functions. With this understanding, the value of careful studies of the insane to the investigating psychologist becomes plain. There is to be no dealing with a new species, related but slightly to ourselves, but the study of humans who have many normal ideas, feelings and acts of will, but who react to certain ideas or feelings more weakly or more strongly than we. From the standpoint of psychology, the problems are the same whether we deal with the insane or with normal people.

The formulation and selection of problems are prerogatives of the individual investigator. Inclination, previous interests and the character of the material will shape the course of one's research, but it may the better help to direct attention to the work if I consider briefly some special topics. The matters of which I speak will indicate the diversity of questions which are to be answered; many have almost intruded upon me during the examination of individual patients.

A problem of both psychiatric and psychological importance is that of the correlation of mental conditions in any disease. In any typical bodily disease there are found certain symptoms which are intimately related. Thus, in typhoid fever we find in addition to the characteristic rises and falls of temperature a peculiar reaction of the blood, certain bacteria in the intestines and usually abdominal tenderness and rose spots. These symptoms or factors make up the picture 'typhoid fever' and they are or may be correlated with each other. In the same manner in any mental disease there are many changes. A simple depression, for example, is made up of depression, a difficulty in thinking, a slowness of movement, plus x (the undetermined abnormal). These abnormalities, or some of them, appear in every case. Those which appear in every case will de-

termine the disease type and these changed mental conditions have probably a higher degree of correlation between each other than does any one of them with a process which remains normal. Here the psychologists have an opportunity of determining for psychiatry the symptoms which are essential, those which when grouped together make the disease type, and of discovering for psychology a possible correlation between gross mental states. It is needless to say that the solution of such a problem is the work of many men for many years.

Of philosophical and psychological interest, yet not without its practical side, is the subject of the feeling of reality. Disturbance of this feeling, which has been conveniently but erroneously called the 'feeling of unreality,' is found associated with many mental diseases. Patients say they see, feel and hear things, but that the objects do not appear real, parts or all of the body lose the feeling of reality, and that their thoughts are not real. *Cogito ergo sum* is not always true, and the doubt arises that existence is included in thinking or in perceiving. To what is this deficient feeling of the sense of reality due? Some psychologists have argued that the 'esse' is immediately given in '*percipere*,' but the numerous instances in the insane and in normal people in which sensed objects are deemed 'not real' make this doubtful. The disturbance of the feeling has been explained as the result of (a) the loss of apperception ability or (b) of changes in general organic sensation, particularly in those associated with movement. Neither of the explanations, it seems to me, is founded on a sufficient basis of careful observations, and the problem awaits further experiment and analysis. The peculiar conditions of micropsia and macropsia—apparent decrease or increase in size of objects—are phenomena probably of the same character as the deficient sense of reality.

In the realm of sensation the psychologist has spent most time, but the organic sensations have remained unattacked, or attacked ineffectually. The importance of investigating the organic sensations needs no emphasis. It is sufficient to point out that among the insane there are many who have alterations of organic sensibility, and these would undoubtedly repay a most careful study. There are some who have lost the ability to appreciate fatigue, and some who are abnormally tired. Others report a loss of hunger sense, more have sensations from the internal organs which give rise to delusional interpretations—pregnancy, the presence of animals in the abdominal cavity, etc. Careful examinations and experiments on individuals in whom it is evident there are losses and exaggerations of the organic sensibility appear to me to be the most hopeful line for progress in this unknown region.

For the psychology of perception, studies of hallucinations in the insane are of great value. Because of the popular as well as scientific interest much attention has been given this subject, but the investigations have done scarcely more than skim over the surface. The origin and development of these false perceptions remain undetermined, and the influences of the emotions or states of feeling in the production of the hallucinations are unknown.

The fluctuations of the attention which are found in Korsakow's syndrome are so marked that they can be noted by rough clinical tests. These fluctuations are larger and wider, come at longer intervals of time, and are probably added to the smaller fluctuations which have been noted with normal people. In the downward dip, so to speak, of these oscillations the patient seems not to see, hear or feel, and does nothing. The mental processes cease for about half a minute and after the lapse go on. Such cases will lend themselves well to experimental inquiries into the duration of the attentive and non-attentive states and to the determination of the factors which distract and those which hold the attention. In the excited condition of depressed-maniacal insanity, the attention appears to be rapidly shifting but easily attracted to passing events. There is, to use a clinical term, great 'distractibility.' In the depressed stage the attention is less variable, and is probably fixed on the depressive ideas which dominate the clinical picture. The catatonias or rigidities, found in cases of dementia præcox, are most likely due to the narrowing of the field of attention, with a possible intensification of the attentive state. These wide variations in attention are to be found in every hospital for the insane, and the formulation of definite problems will be simple to one who is especially interested in this field.

In the study of the diseases of memory much effort has been made to record and to attempt to explain the spectacular amnesias—the paramnesias, the anterograde and retrograde amnesias—but the many instructive cases with simple memory defect are not less, but rather more, worthy of study. There are those in whom there is a rapid fading of impressions and in whom it is necessary to repeat impressions often in order to have the images retained. I have seen and examined individuals in whom the faculty of retention and recognition remained unaltered, but in whom the ability of reproduction was at a minimum. Sentences could not be given after very short intervals of time, either verbally or in sense, but if, with the correct idea, one or more facts were given from which to choose, the correct choice was made. In these patients there is a dissociation between the reproductive and the retentive elements of memories. The extreme dissociations of verbal and visual memories are to be found

in the aphasias, but these are not often classed with the insanities. It is a suggestive fact that practically all of the memory defects are found in those mental diseases which are associated with cerebral cortical alterations.

The abnormally prolonged affective states of depression and exaltation which are accompanied, respectively, by a slowness, sometimes a lack, of movement and by increased motor diffusion, if carefully studied, will give us information about the emotional side of consciousness. Their constancy for weeks or months and their frequency in all classes of the insane offer points of advantage for investigation over the affective states of short duration which are artificially produced in psychological laboratories. Every idea is colored by the predominant feeling tone. In depressions, for example, only ideas of sadness arise; melancholy thoughts and gloomy forebodings accompany or comprise all mental activity. The associations are only of despair. The possibility of diverting the mental current into joyful or even into normal channels is doubtful. In the pathological conditions of exhilaration the reverse is true. Cheerfulness, elation and playfulness are the characteristics of the maniacal state. Either of these states may pass off and the other appear; sometimes the oscillations are regular and frequent (circular form of depressed-maniacal insanity). The changes from melancholia to mania or from mania to melancholia may be examples of the 'law of contrast in the sphere of feeling.' In the depressed state is the inactivity or retardation a concomitant, a cause, or the effect of the feeling? Is it possible to modify the affective tone by increasing the bodily activity of a patient? On the other hand, may reductions in the activities bring the exhilarated patients nearer a normal condition? The answers to these questions have both practical and theoretical bearings. Elsewhere I have shown that exercise helps to reduce the retardation in conditions of depression and probably makes the state of depression less marked, but much more work is needed in this field. Other important problems of affection are to be formulated from careful studies of cases of dementia præcox. In this form of insanity there is an apathetic condition which—this has not been determined—may be primarily emotional or intellectual. The prominent facts are that stimuli produce no apparent emotional response, and that the patients report an indifferent attitude toward everything. Psychologically this condition is either one of lessened emotional irritability or one in which the emotional response fails because of the paucity of associations.

The suggestions for work in the varied fields of sensation, perception, attention, memory and emotion will serve to indicate the diversity of problems which will suggest themselves to the psycholog-

ical student of the insanities. The matter of the ease or the difficulty of dealing with the material remains to be considered. The question has been often asked me whether or not the insane are more difficult to work with than normal people. I believe both to be equally easy or equally difficult subjects. Many insane do not introspect well, but few normal people do so. Some insane are more introspective than the average normal individual—and from some no introspections can be obtained. It is not necessary to work with the patients who introspect badly or not at all; there is a possibility of a selection of subjects just as there is in normal psychological work. In general I think there is no inherent difficulty in investigating the mental conditions of the insane. There are, on the contrary, advantages in the medical investigations in that the mental life is laid as bare as the patient and his relatives and constant observations can make it.

The only limitations to the problems are the individual investigator and the material at his command. Two mental conditions are indispensable in a psychopathologist—a knowledge of normal psychology and ingenuity in formulating and in devising methods of attacking problems. These are not peculiar properties of the psychopathologist—they are of prime importance to all psychologists. The special equipment which is needed in dealing with the insane is the acquirement of the medical mental attitude—one must deal with cases, not with individuals.

I have attempted to indicate in this paper that for psychology the study of the insane is complementary to the study of normal people, and that there appears to be a possibility of solving some problems which have not been solved by the study of normal minds. The pioneers in the work will be called upon to justify their positions and work, and this will be done best by applying their psychological methods to the more immediate practical problems. Then we may expect no longer to read: "The pure psychologist has rendered little aid to the physician, nay, has rather tended to darken counsel and lead him into the wrong track, from which he has taken a long period to extricate himself."

SHEPHERD IVORY FRANZ.

MCLEAN HOSPITAL, WAVERLEY, MASS.

THE GIVEN SITUATION IN ATTENTION

THE different theories of attention, sometimes seemingly conflicting, oftentimes are not in actual fact opposed, but merely appear to be so, due to the emphasis placed on different aspects of the situation concerned. Instead, therefore, of engaging in a logical disputation or a spinning out of concepts, it seems much wiser to go as far back as we can to the given situation, and see exactly what is

there present in an act of attention. For this purpose an analysis of the meaning of the given situation becomes necessary before the subject of attention is touched.

I shall begin by taking a number of things for granted, not to avoid treatment of them (I hope to deal with them elsewhere), but because they are of a philosophical nature. I shall assume (1) that there is an 'existential world' towards which adjustment and accommodation are possible; (2) that in addition to this 'rest of the system' there is a self, person, or conscious agent capable of adjustment and accommodation; (3) that the point or points of junction between the agent and the rest of the system afford us the given situation, object, or what you will; (4) that increasing differentiation of adjustment and further development of this situation demand attention on the one side and habit on the other. Attention only will be considered in this paper.

To be more explicit I shall treat these points somewhat more fully. It is highly flattering, no doubt, to the individual concerned to consider everything else as *his* brain-event, his mental state, or what you will. But so far as psychology demands, we can for the time at least (even for purposes of discussion) throw over the notion that an individual can shoot forth a world, system of worlds or a universe by a mere fiat of the will or flash of consciousness. We are content to believe that chapels are *not* churches and that poor men's cottages are not princes' palaces, nor will any idea or good intention *per se* make them so, as such. Besides this rest of the system or universe, I shall also for the present take for granted the self, individual, ego, etc. What may, however, cause some query is the point of junction between the two, the given situation. It is only here that we are on a firm basis so far as conscious life is concerned, only here have we the touchstone of reality. We are so accustomed to speak of ourselves, so concerned with our interests and occupations, that the self and the rest of the system seem existentially to come first. But they are merely a stage in the process of differentiation and development of various situations, a residual effect which we deal with *in abstracto* and occasionally, if not almost always, hypostasize. But these, intimate as they are, are secondary, acquired and ideally abstracted from given situations. And abstractions are again simply other situations, less filled and more easily manipulated than the bases from which they have been taken and for which they serve. So, too, as regards 'external reality.' Reality apart from a knower (or feeler) means nothing. We carry our reality on our backs, and resemble Sinbad in this particular. In so-called 'concrete' experience this seems more or less evident, and the given situation is so given that we are able to test it in various ways and in a manner

suited to the average mind. The *cruz* seems to be with images, which are so fleeting, so transitory, so unsatisfactory as situations that any 'objective' reality seems to be denied them. But if we consider that 'objective' is a secondary stage in the process of differentiation and based upon certain situations, this seems to lose some of its difficulty. Moreover, we must consider images as situations given only at certain points of junction, and on this account they lose some of the stability of what is called 'concrete.' The image is a given situation just as well as its more concrete brother, and the 'reality' back of the latter is just as existent in the former case, the difference being that the points of junction in the former case are less numerous and also differently stimulated. As immediate and unanalyzed, images are just as much given as the most 'tangible' object. But as I have just said, images seem to be restricted in their points of junction and can not be tested by other junctions.

These points of junction, the given situation, are in fact all we have. The avenues of contact between the individual and the rest of the system are (in part) the determinants of the kind of these junctions and permit of more or less detailed and filled situations. It is to the given situation that we must react, adjust ourselves; it is the given situation which we must develop, differentiate, improve, if possible; or which we must cut off or remove altogether. It is here that a seeming contradiction takes place, a paradox which, when explained, will also perhaps elucidate more fully the meaning of situation and point of junction. It may be asked (so it occurred to me at least): How develop a situation, how change it if it is always with us? How, in fact, can we do anything with it, for it is always given? We have nothing to do with the matter, for go where we will, do what we may, we can not escape the given. It stares us in the face, pursues us with relentless vigor and even at times oppresses us like the nightmare. And so it does; *but* a given is not every given situation, nor is it given at every point of junction. A situation is given in the sense that we are aware-of-something, have consciousness-of-an-object, and this awareness-of-something may be of different kinds, the points of junction may be more or less and may vary in kind. In psychological terms, this point of junction may be visual only (or more nearly so), it may be auditory, tactile and the like. So commonplace an explanation may destroy the mystery of philosophical terminology, but it does not do away with the rigidity of the fact that all we have is a given situation with more or less points of junction. Now, granted a single point of junction in a given situation, we see more easily how the situation may become changed, developed or even removed by another. If the point of junction is visual, it may be developed by other points of

junction, by body attitudes, motor adjustments, by manipulation within limits. The given situation may thus be developed, other points of junction may be made, but within limits, for we have the rest of the system with which to deal, and this seems to offer us obstacles beyond which we can not go. What these limits are we do not know, and we can only try to make as many points of junction as possible, the process of differentiation becoming increasingly intricate and our adjustments more refined and accurate.

Development of a given situation means simply that, given a situation at a certain point of junction, other connections may be made, changes may be brought about or other situations substituted through action of the individual concerned, and such action or actions mean simply a series of new situations which, when analyzed, yield us the pleasing knowledge that we *have* acted, action as thus conceived including all forms of ideation, *i. e.*, all forms of given situation, whether points of junction be few or many and whether they be within and through the parts of the agent concerned. Given a situation visually, we may react towards it by a series of motor adjustments, and the visual point of junction is supplemented by the motor. Granted a residual effect in the individual through former experiences, such adjustments will proceed serially with a greater or less nicety and accuracy, and so give rise to new points of junction. With no such residual effects the adjustments will be more blundering and erratic. If necessary, the individual may within limits develop the situation, *e. g.*, by simply breaking it in two, bringing into it or combining with it new factors, new situations, such process going on in the example taken through motor adjustments, in which case motor points of junction bring about a change in the visual field. Or the individual may shut out the old situation by simply giving rise to another. The succession of situations need not, of course, be always continuous in the same field. The breaks and gaps which may occur in any one kind of junction give us a more or less intermittant series of junctions, visual, tactile and the like.

In its various stages of development the given may schematically be represented as follows, the figures being in the horizontal plane.



FIG. 1.

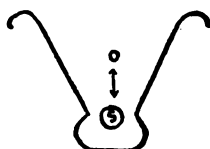


FIG. 2.

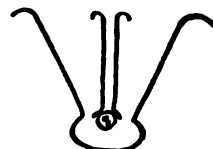
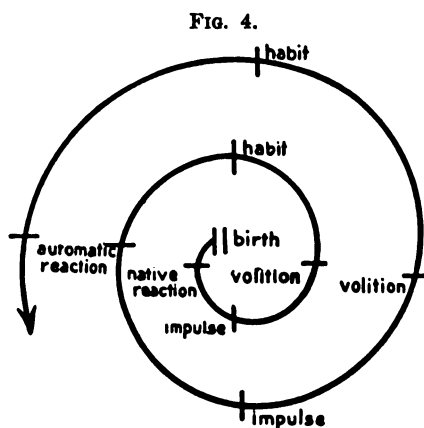


FIG. 3.

In the first figure we have the given in its utter nakedness, before any differentiation has taken place. The second figure illustrates

the stage in which a scissure has been made between the self and the world of 'external reality,' such division through habit, and wrongly, being taken as basic and primitive. Finally, we have in the last figure a graphic illustration of the process of differentiation going on in attention. In its first intention every given situation affords us a scheme like that in Fig. 1, and from such a scheme all else is developed. On this seemingly barren confusion everything has been erected and to this return must constantly be made to give body to our constructions, ideal and otherwise, to our hypothetical systems and to our various symbolic guides to action. Science, psychology and the others, are simply constructions based on certain aspects of this given. And to test our ideal developments return must constantly be made to foundation situations. Our reactions are made for the most part to foundation situations, though guided at times by our hypotheses and ideal systems. The latter again are different situations, sign-boards telling us more or less clearly which way to go. In most cases our division of the situation into self and 'external reality' has become so habitual that we take it for granted, and treating each logically sometimes separate them as existential and vainly seek their point of junction. But the given situation includes both, and each is simply one of our basic constructions allowing of further and more delicate adjustments.

It is through successive acts of attention to given situations that differentiation and development are possible. Residual effects accu-



Baldwin's Scheme¹ (with omissions).

mulate both in the subject and in the rest of the universe, and these accumulations allow of further change and growth. In the individual such cumulative results are represented by habit, mental dispositions, etc., while in the rest of the system we have 'material'

¹ See his 'Mental Development,' p. 384.

progress, tradition, moral law and order and the like. Using Baldwin's suggestive diagram (Fig. 4), by the increase in the spiral we represent the growth and change in the individual and also show the larger basis from which the self can start in each new act of adjustment.²

Development of a given situation demands a narrowing of the field under manipulation, a fixation of the object, a closer and more refined and accurate series of adjustments, a more delicate interpretation, a finer 'feel,' or body attitude—in short, attention. Attention is thus nothing more than the entire subjective aspect in the given situation under development. Now, using the given situation under manipulation as a foundation, we may proceed to analyze it and construct out of it the various systems connected with psychology in general and attention in particular. Where questions arise concerning the validity of such structures, return can be made to the given situation. The abstract scissure between self and not-self being more or less habitual and therefore a basis for further construction, more aspects of the given situation can be developed to form a sound theory concerning the psychological features of attention, the abstraction and construction here continuing in the direction of the self. The following features may in outline be given:

1. Taking the given situation as a static moment and recognizing those features specially prominent in moments of attention, we note specially certain aspects in the point of junction which stand out in moments of attention. Analysis of such aspects yields us the *Blickpunkt* view of attention, the theory that attention is simply a mental state, a condition of clearness. Mental state, it may here be noted, is simply one of the more general terms representing certain aspects of the situation before us, the half, in fact, of our awareness-of-something. Such a view (the *Blickpunkt* view of attention) deals only or mostly with the points of junction, and neglects other and more important features.

2. If we consider the residual effects on the self concerned, we note that after various situations have arisen, action under such or similar conditions proceeds with a certain amount of prevision, a certain foresight. Moreover, certain aspects of the given situation seem reinforced by ideal processes within the self, such ideation being a development within the self arising from previous experience with various situations. The situation has a fuller meaning due to experienced interpretation, to ideal revival, to mental reenforcement. In this light we have attention in its ideal aspect. Considering will *in part* as the explication in serial order of a mental disposition, voluntary attention is here included.

² See Baldwin's 'Mental Development in the Child and the Race,' Ch. XIII,

3. The actual process of adjustment to a given situation, the adding of points of junction to the one or more present and the working over of what is given, afford us the motor aspect of attention. Combined with the first aspect we have the sensori-motor phase of attention. We may deal in this connection with questions of felt activity, sense of effort and the like.

4. Going still further and seeking within the self a substratum present in attention, the physiological features may be emphasized.

5. If, finally, we inquire as to the extent of our power of adjustment, the limitations within the self in acts of attention, we may deal with the unity of the field in attention.

Properly to treat the subject, therefore, we must consider attention in (1) its sensory aspect, (2) its ideal aspect, (3) its motor aspect, (4) its physiological aspect, (5) its mental field. It is evident that since these various aspects are given in a single complex, their separation is purely logical, and it is also evident that various features interlace and cross one another. Thus the motor aspect can not well be torn from the ideal, while the treatment of the mental field demands a more or less full discussion of motor adjustments, idea revival and sensory restrictions.³

FELIX ARNOLD.

NEW YORK CITY.

EMOTIONAL EXPRESSION AND THE DOCTRINE OF MUTATIONS

HOW does it happen that our biological psychologists have not yet undertaken to make appeal to the doctrine of mutations for the explanation of the various bodily attitudes that serve to express and in part to constitute our emotions? Is it because this doctrine is still to such an extent under adjudication? Or are there more recondite reasons? The professional biologist has been warning us for some time that mere utility is an explanatory category that must not be overworked. But surely a heavy strain has been put upon utility in connection with emotional expressions, a strain that now and then is so obviously excessive that one marvels at the speculative temerity that permitted it.

For the understanding of some 'expressions' the principle of serviceability has, to be sure, done much that is satisfactory. Such

³I feel guilty in making somewhat free use of the expression 'given situation,' which I have taken from Dewey. See the standpoint of Woodbridge in his 'The Nature of Consciousness,' this JOURNAL, Vol. II., No. 5, 1905, and the wonderful presentation given by Münsterberg in the beginning of his 'Grundzüge.' Compare, also, Hobhouse's 'Theory of Knowledge.'

relatively simple matters as the frown, the sneer, the clenched fist, the motionlessness of fright, the start of surprise, have allowed themselves readily to be classified as inheritances of bodily attitudes once useful in race history. But from here on difficulties have begun to multiply, and the purely conjectural element in the suggested explanations has notably increased. In fact a certain spirit of sportiveness seems often to have characterized reflections in this field. Mantegazza's remarks upon the tremblings of fright as serviceable, blood-warming reactions is a case in point. And Wundt's endeavor to find the value of tears in the laundry service performed in removing accumulations of dust and of other less innocuous inconveniences from the eyes carries with it a minimum of weight, and serves mostly to raise a smile on the face of those who believe that primitive man was an ignoramus in matters of dust compared with the modern inhabitant of a windy city.

Most of all, naturally, has difficulty been felt in dealing with those attitudes which, regarded as isolated reactions, are manifestly lacking in utility. Thus the blanching of the hair in fright; the sparkle of the eye in a moment of delight; the dryness of the mouth in various emotions; the copious perspiration in certain types of alarm; the pallor of fear; the blush of embarrassment; the glows and tingles of joy, and in fact laughter itself: these, we are commonly told, are to be understood only as viewed in relation to larger complex reactions of which they are sequents or constituent parts. Sully's attempt—somewhat feeble, it must be confessed—to connect laughter with a sportive tickling by a playful antagonist, this tickling itself having been originally the necessary accompaniment of hygienic services rendered to hairy man by an accommodating companion, is a case in point. So also is Borgquist's recent endeavor to connect blushing with functions of organs once closely associated with digestion. So, in a word, are all of those writings which see in such traits as the dryness of the mouth the necessary resultant of powerful and deep-seated circulatory changes involved in the successful adjustment to some trying situation.

The 'overflow' theory of emotional discharge in its pure form obviously deserts the principle of utility. The mere fact, for instance, that certain of the facial muscles are smaller than others entails their more facile innervation. There is no *advantage* gained in the particular distribution of responses that follows the overflow. It might have been quite different so far as the individual's adaptive efficiency is concerned.

Without looking further into proposed explanations, we may, it seems to me, summarize the existing situation by saying that while a restricted few of our emotional attitudes on their bodily side can

be best understood when we regard them as survivals of once useful reactions, there are still many details of emotional expression that refuse to be crowded summarily into the category of serviceability. While not wholly abortive, attempts to dispose thus of certain emotional expressions have remained unconvincing and at times amusing. Our need then, it appears to me, is of some principle which in co-operation with that of utility shall enable us to cover the field with a higher degree of satisfaction than has thus far been attained. To the present writer 'mutation' seems to be the principle desired. To conceive of tears, of blushing and of laughter—to choose but these instances—as mutations appearing suddenly and in stable form, as is the wont of mutations, and arising from complex, subtle and certainly not yet assignable causes, is hardly less taxing to one's intelligence than to reflect upon de Vries's products from Lamarck's evening primrose. Conjecturally man must have been at various stages in a state of high mutability, and may it not be that either as an outcome of one of these periodic stages or as stray mutations many of man's emotional reactions arose? Indeed, many more than are now existent may well have arisen to be subjected to the culling and sifting process of natural selection.

But the present writer is too much of a layman in biology to presume to carry this discussion into any detail. He would, however, be greatly pleased—and herein he believes he is expressing the mind of many more than himself—if one of our biological psychologists would take up this matter and handle it in the thorough manner that it seems even now to deserve.

A. H. PIERCE.

SMITH COLLEGE.

DISCUSSION

THE MAD ABSOLUTE OF A PLURALIST

IT is not altogether clear to me whether Mr. Schiller's recent article on 'Idealism and the Dissociation of Personality'¹ is to be taken seriously or welcomed as a delicious burlesque. I incline to the latter view, if for no other reason than that in a case of doubt like this it is less discomfiting to one's *amour propre* to be caught a disciple of the laughing philosopher than to commit openly the awful blunder, appalling even in the aridities of metaphysical discussion, of failing to see the point of a joke. At all events, a rarely humorous article is this. Doubt, a mere shadow of a doubt, as to whether the humor, all of it, was intentional or not may be cheer-

¹ This JOURNAL, August 30, 1906, p. 477.

fully offered as a tribute to the subtle skill of the writer of the article.

There is such a thing, of course, as carrying a joke too far. Yet I am tempted to ask whether Mr. Schiller should not have carried his joke on the monist a little farther—if joke it was—in order to make sure that it did not return on the pluralist.

Two of the major difficulties which idealistic monism must face, asserts Mr. Schiller at the outset, are (1) the imperviousness of human minds limited to indirect and physical avenues of intercommunication, and (2) the wayward and chaotic dissimilarity of these finite minds which are by the hypothesis of monism to be included in the universal consciousness. The world seems to be essentially pluralistic, and stubbornly resists the attempt to force on it a monistic interpretation, save possibly in terms that are palpably materialistic. But Mr. Schiller bids the idealistic monist be of good cheer if he will only condescend 'to appeal to experience and empirical evidence,' and heed the analogies which modern psychology puts at his disposal.

And now, under the guise of affording aid and comfort to the idealist monist who has apparently consented to swallow the bitter pill of empirical psychology, Mr. Schiller unfeelingly prescribes as the first dose two of the rawest and least understood phenomena of the science—the subconscious or subliminal mind and the dissociation of personality. He assures his patient in the course of the treatment that if men are to be convinced of the plausibility of monism, no more effective policy could be adopted than that of establishing the reality of telepathy on an irrefragable basis. Surely this would be paying a pretty stiff price for the triumph of monism; but then the monist must remember that he has consented 'to appeal to experience and empirical evidence.' It is only fair to add that Mr. Schiller points out suggestively some of the monistic implications of subconscious phenomena this side of telepathy.

A less remote but more repugnant analogy is found in the dissociated personality phenomena. The facile process of generalizing the 'Beauchamp family' to approximate the absolute dissociated personality unfortunately does not eliminate the objectionable traits of the original elements. The morbidity, the insanity, of the finite prototype loom large in the Leviathan. "It is a little startling," remarks Mr. Schiller, "*e. g.*, to have to think of the absolute as morbidly dissociated or even downright mad." But this is merely an ethical prejudice, continues Mr. Schiller, and must not dismay us. Besides the absolute is obliged *ex hypothesi* to include March hares and similar creatures with all the rest of reality. The absolute is bound to be a little mad anyway. "All that the analogy suggested

does is to ascribe a somewhat higher degree of reality to the madness in the absolute."

In thus generously providing the monist with naturalistic weapons with which to fortify his position against the assaults of naturalism itself, should not Mr. Schiller have pressed on and endeavored to win him for an ally? As it is, one can imagine the monist replying:

"Since you admit the thinkability, if not probability, that different personalities may somehow be derived, differentiated, or dissociated from an underlying substance, what alternative do you offer to the suicide of pluralism save the suicide of the absolute, which you regard as unessential to the argument? Admit the derived nature of your pluralistic entity as thinkable, and on what must the tortoise of your universe rest? On a mad absolute? Mad, only in so far as pluralistic! Look again at the analogy of dissociated personality. Is it not true that alienists commonly locate the degree of insanity in the extent to which the personality of the patient is split off into inconsistent, conflicting or isolated selves, and that they attempt to effect a cure by sounding the depths of hypnotic reminiscence for the deeper and older bonds of association that have fallen out of the reach of voluntary recollection? Following out the implications of this analogy, what becomes of the madness ascribed to the absolute? Are not the tables completely turned? The quest for the absolute is the quest for sanity, for wholeness; health, that shall reunite and heal the isolated and insane elements, blindly pluralistic. The analogy may be pushed still further. Idealistic philosophy is that trance of the human spirit in which it seeks to renew and to reassociate those underlying bonds of unity, lost from the blind, waking grasp of split-off, half-insane, fragments of human existence."

I observe that the monist takes a more serious view of Mr. Schiller's article than I dared to take. The moral of it is that it behoves the absolute to be sane if the absolute is to be in analogy with the *rationale* of dissociated personality. There is surely a distinction, not to be ignored, between the *experience* of a dissociated personality and the functional *rationale* of that experience—especially if the sanity of the absolute hinges upon it.

WILLARD C. GORE.

UNIVERSITY OF CHICAGO.

REVIEWS AND ABSTRACTS OF LITERATURE

Reason in Belief, or Faith for an Age of Science. FRANK SEWALL, M.A., D.D. London: Elliot Stock. 1906. Pp. ix + 208.

In this most attractively printed volume we have the mature thought as to truth and reality of a scholar who happily combines the temper and culture of the artist, the philosopher and the theologian. This saves his work from any trace of the *odium theologicum*, and gives it the sweetness and light of literary form. Though theology is frankly made the queen of the sciences, philosophy is given its ancient and honorable place of *ancilla fidei*. And it is made a real handmaid. The argument of the book is purely philosophical, rather than theological.

"Whatever higher revelation the world may enjoy, the human reason, acting independently on its own plane, retains forever its prerogative of giving confirmation and intellectual certainty to things thus made known" (p. 641).

"Starting with Kant's generally accepted doctrine of the unity of apperception in the soul, as the basis of all relation and knowing, I have carried the principle to results, not only as touching the existence and the personality of God, as Dr. Ward has done in his 'Naturalism and Agnosticism,' but as relating to the other great fundamentals of the Christian religion—revelation, incarnation, immortality, salvation" (p. v).

His volume on 'Reason in Belief' is based on 'belief in reason.' The line of discussion is first epistemological and then metaphysical. Its purpose is to 'bring to the view of the scientific mind of our time a system of rational Christianity.' This is not to be based merely on extension of physical knowledge on its own plane, but on the faith in reason that is the soul of science and philosophy. He proposes to examine the great doctrines of Christianity to see in what relation they stand to a single, all-embracing rational conception of the universe, and then to give a 'faith for a scientific age.'

The book, however, I think, will appeal only to the *thinkers* among scientists. On the rank and file, the gatherers and classifiers of facts, and the specialist, it will make little impression. On the other hand, it will appeal to the large class of thinking men within the Christian church who are perplexed as to the rationality of the Christian doctrine. For this it will have a clarifying and helpful message.

Chapters II. and III. give a brief résumé of the course of thought from that of the early Greeks up to and through Hume and Kant to *absolute idealism*—to 'a single, all-embracing rational conception of the universe' or a rational, spiritual and personal reality.

He accords science the fullest sweep on its own plane of knowledge, but holds that philosophy yields a higher kind of knowledge—the knowledge of the principles and the necessary and ultimate presupposition of science, or the knowledge that the ultimate reality of the universe is mind.

He uses Kant's theory of knowledge to show that, as science presupposes non-sensuous principles, in the last analysis belief in the super-

sensuous is the soul and validity of all our knowing, and that the conception of the Divine Personality is the logical inference from both the physical and the moral unity of the world (pp. 39 and 64).

"Can inductive science be regarded as necessarily opposed to faith in the supernatural?" This is the question which he answers in a clear and valuable analysis of 'The Nature and Basis of Induction' (Chapter III.). Induction is not a material process. "Things do not infer, nor make inductions about themselves. Mind alone, and not atoms, compares. Mind furnishes the *a priori* conditions of all induction. The static basis of induction is the mind's perception of relations. This must rise from finite to infinite mind, in order to be a rational and objective basis. That is, the static basis of induction is supreme intelligence. On this basis it becomes dynamic and prophetic. One may always safely hazard the supposition that law and order and unity are to be found in all the things and events of the physical world, because of the basis of certitude in the mind that knows all.

"The certainty of all our knowledge, therefore, is based on the conception of an infinite and universal mind; a subject in whom all particulars are united, and even subject and object are seen and experienced as one, not one in identity, but one in harmonious correspondence" (p. 50).

In Chapter IV., on 'The Unity of Experience,' he uses Ward's 'Naturalism and Agnosticism' to show that the unity of consciousness in man's experience leads to the conception of a *whole* of experience which can only be for a universal mind, or the Divine Personality. Here I should say that he over-emphasizes 'the volitional end or the origin of the knowing faculty' and rather lapses from his philosophical basis into a phase of pragmatism. However, he recovers his speculative basis when he goes on in Chapter V. to treat of 'The Personality of God.' Here he declines to depend upon a demand of our moral nature and shows 'that the doctrine of the Divine Personality lies inherent, not in the main on the moral sense, but on the possibility of human *knowledge*' (p. 69).

"A knowledge of universal relation must lie at the basis of, as giving security for, the finite mind's knowledge of any relation: and the Divine Personality of the infinite must preexist as the final and real basis of human knowledge."

Then, in the light of this reasoned first principle or ultimate reality, he goes on to consider the great fundamentals of the Christian religion—revelation, incarnation, immortality and salvation. We have not space to give an abstract of this larger and most interesting part of the work.

Creation and revelation are shown to be self-necessitated activities of the love in the Divine Personality. Self-revelation or God's utterance of Himself is no mystery. "The absence of it, the inability of God to make Himself known, this would be the really difficult thing to account for" (p. 89).

So, too, the *Cur Deus Homo*—the why and the how of the incarnation; the doctrine of man's spiritual nature; the doctrines of sin, salvation, the spiritual world;—they are all reconsidered in the light of the ultimate ground of the universe—the Divine Personality.

Divine Personality implies the emotion, the self-activities of love in four great steps:

1. Producing an object of love; *i. e.*, creation.
2. Communicating with that object; *i. e.*, revelation.
3. Withholding that object from self-removal beyond the possibility of return—creating the orbit of human equilibrium; *i. e.*, incarnation and redemption.

4. Recalling the creature to the Creator and conjoining God and man in the life of useful service to eternity, which are accomplished in salvation, the soul's immortality, the spiritual world and heaven (pp. 190, 191).

The book is free from any polemical tone. Its temper is sane and sweet, humane and philosophical. It will, of course, be classed with theological books. But, as I have indicated, the theological part is preceded by and based upon epistemological and metaphysical principles. Its 'Reason in Belief' is based on the candid acceptance of belief in reason in man as based upon mind as the ultimate and absolute reality.

J. MACBRIDE STERRETT.

THE GEORGE WASHINGTON UNIVERSITY.

The Evolution of Religion: An Anthropological Study. L. R. FARNELL.

London: Williams & Norgate; New York: G. P. Putnam's Sons. 1905.

Pp. viii + 234.

The volume consists of three essays which were originally delivered as a series of lectures for the Hibbert Trust. The first essay considers the methods and problems of comparative religion. It is especially the relations of the science of comparative religion to anthropology that are discussed in this essay. In particular the writer criticizes the present tendency of anthropology to investigate only the remote in time and space. To overcome this difficulty he urges the need of an 'Adjacent Anthropology.' "Our first object of study," he says, "should be the more immediate environment of the thing which we wish to understand. It is interesting to the student of Hellenic religion to know 'the Pawnee version of the Eleusinia'; but for the true understanding of the great Greek mystery certain elements in the Egyptian religion, in Mithraism, and in Christianity itself, will probably afford a more illuminative comparison" (page 17 abridged).

To show how anthropological study in the broad sense may be necessary to the understanding of the actual phenomena of any of the higher religions, the author gives a long and highly interesting series of examples from Christianity. As in the temptation of Christ, so in that of Zarathustra the evil one offers the holy prophet the kingdoms of the earth if he will fall down and worship him. The Holy Virgin and the Mother of God, were familiar terms in various Hellenic cults. The use of candles and incense and certain ecclesiastical vestments was taken over from paganism. The cross was used as a sacred symbol in ancient Egypt and Assyria; the idea of apostolic succession was familiar to Hellenic paganism, where the priest was often believed to be descended from the God he served or from the founder of the cult or mystery. Religious

celibacy was practised among the Essens of Judea and by certain Anatolian races. The incarnation of the divine in human form was a familiar idea to the pre-Christian world, and the idea of such a personality as mediator between man and the Supreme God was common to Egyptian, Greek and Roman. The belief in the death and resurrection of the divinity was taught in the mysteries of the Great Mother of Phrygia and Crete, as well as in other Mediterranean communities. A close parallel to the doctrine of the Holy Spirit is found in Zoroastrianism and in certain Greek cults. These are but a few of the many parallels cited between Christianity and earlier faiths. It is not claimed that in all these instances the Christian belief or practise was necessarily derived from the pagan, but that the presence of similar ideas and practises greatly facilitated the understanding and spread of Christianity, and that the survivals of older usages under the new Christian forms and names show an essential continuity in the development of the religious nature of man. These various examples of the fruits of a comparative study of religions, or of promising lines of inquiry now opened up, serve to emphasize the writer's appeal for more workers in the field.

This first essay is essentially only a vindication of the comparative study of religion. The remaining two essays are excellent specimens of constructive work, the one a study of purification and its influence on religion, morality and law, the other an account of the evolution of prayer. The author shows in an able manner the development of the ritual of purification. The savage sought purification from the defilement of some tabooed thing. A thing too sacred or too accursed to be touched—*e. g.*, a corpse—had rendered one impure, and others feared the mysterious contagion. There is no thought of moral wrong done or of any unsanitary contact. The one who has touched the forbidden thing has become accursed, and it is unspeakably dangerous for others to have aught to do with him until he is purified. In its first form religious impurity is a sort of dreadful miasma that must be washed away; then it becomes the curse of some evil spirit; and, finally, an offense against a righteous God, a sin for which remission is sought. Nowhere better than in the conception of purification can we see the distinction between the ritualistic religions of the lower races and the ethical religions of the higher.

Various interesting facts are brought out in the effort to show the influence of the ritual of purification on the development of law. For example, the transition from the savage law that regards murder as an offense merely against the family of the murdered man to the civilized law that regards murder as an offense against the community, may well have been brought about by the belief that any place is defiled by bloodshed. Thus homicide became an injury to all of the people of the place.

The writer finds the origin of purification in the taboo idea. This suggests two questions, which, however, he has not touched upon. Whence the idea of the taboo? May it not be an idea possessing real survival value in primitive life even if in its development it often led to arbitrary and superstitious ceremonials? Again, have we not in the savage attitude

toward the taboo the primitive conscience—the first rudimentary form of the absolute ought? This is a point which the evolutionary writers of ethics have generally overlooked in their desire to develop the content of the moral life.

F. C. FRENCH.

UNIVERSITY OF NEBRASKA.

Platons Philosophische Entwicklung. HANS RAEDER. Leipzig: B. G. Teubner. 1905. Pp. 435.

This essay, which won the prize awarded by the Royal Danish Academy of Sciences, is an exceedingly interesting attempt to determine the order of the principal Platonic dialogues chronologically and philosophically. It is based, as the conditions of the competition required, upon a study of the history of the 'Platonic Question'; but it aims also to contribute somewhat to the advancement of the problem in a positive way. All this has been done in a way to inspire confidence in the reader. The previous attempt of Lutoslawski, laborious and in some respects praiseworthy though it was, was marred by a blind faith in incomplete statistics and by hasty generalizations from individual passages utterly misunderstood. Dr. Raeder has in the main guarded himself successfully against such errors, and his book may, therefore, be recommended to those who desire to acquaint themselves with the present status of the question.

As regards the order of the dialogues, it will doubtless be of interest to note that Dr. Raeder agrees almost perfectly with the arrangement proposed in Gomperz's 'Greek Thinkers,' the only important exception being that the 'Phædrus' is placed after, rather than before, the 'Phædo' and the 'Republic.' This is hardly the place to discuss these matters of detail, but it must be said that, while in all probability the order assumed by Raeder and Gomperz closely approximates to the order in which the dialogues were written, the argument at many points still remains far from conclusive. Indeed, in both Raeder and Gomperz arguments are used that cut both ways and show unmistakably that in many instances an arrangement is first assumed and then justified.

The 'Republic,' as is fitting, receives the lion's share of the author's attention, and his treatment of it is on the whole very satisfactory. It is a pleasure to find him combating the arguments of those who would divide the dialogue and assign its parts to widely different periods of Plato's life. We know far too little of Plato's mode of composition to attempt so hazardous a task. The 'Laws' hardly receive their just proportion of space, probably because the significance of the dialogue is not yet fully appreciated.

W. A. HEIDEL.

WESLEYAN UNIVERSITY.

Philolaus. WM. ROMAINE NEWBOLD. *Archiv für Geschichte der Philosophie*, January, 1906. Pp. 176-217.

In this article Professor Newbold gives us a most suggestive study of several fragments of 'Philolaus.' The Pythagoreans are confessedly the

most difficult chapter of Greek philosophy. Hence, to say that one has shed light on any phase of the subject is indeed high praise. This honor has been well earned by Professor Newbold, whose article will long be read and valued. The nature of the subject, and of the argument also, is such that it would serve no good purpose to restate them here. One may the more readily dispense with such a summary because those who have a more especial interest in the Pythagoreans will carefully read the article itself.

I shall, therefore, confine my remarks to matters in which I differ from the views expressed by Professor Newbold. Page 178, the clause οὐ ἁρμονία is not, I think, correctly rendered. The personification appears to be strongly marked, as is indicated also by οὐ γὰρ οἰκεῖον αὐτῷ ἐστι. The translation should read: "The nature of Number, whose daughter is Harmonia, admits no untruth; for untruth is no relation of his." Page 183, Professor Newbold suggests συνάπτων for MS. σωματῶν which Boeckh changed to the participle σωματῶν. The meaning required, as Newbold says, is clearly 'compounding.' I had myself so interpreted the passage, contrary to the opinion of Boeckh and his successors, who take it to mean 'embodying.' I have entertained a number of possibilities, such as συμβάλλων, because of Heraclitus fr. 4a (Diels) κατὰ λόγον δὲ ὥρῳ συμβάλλεται ἐβδουμάς κατὰ σελήνην, διαιρεῖται δὲ κατὰ τὰς ἄρκτους, a passage closely analogous and probably showing the influence of the Pythagoreans; or such as συναιρῶν (the normal contrary to διαιρεῖται in the fragment just quoted), because of Plato, 'Phædrus,' 249B. Another passage which throws some light on the question is found in the Heraclitic 'De Nutrimento,' attributed to Hippocrates, Ch. 23, κατὰ μὲν οὐλομελίην πάντα, κατὰ μέρος δὲ τὰ ἐν ἐκάστῳ μέρει μέρη πρὸς τὸ ἔργον. The problem is that concerning the relativity of the terms 'whole' and 'part,' another phase of the problem of the 'one' and the 'many,' with which all of the Greek philosophers busied themselves. I have now, however, persuaded myself that Boeckh's reading is correct, though his interpretation was erroneous. That the verb σωματοῦν could bear the required sense is made highly probable by the fact that σωματοποιεῖν, naturally its equivalent, is used in a sense nearly, if not quite, the same.¹

Page 184, Professor Newbold renders ἐν τοῖς ἔργοις 'in the works,' following Diels, who says 'an den Werken.' Later (p. 186 ff.) Newbold interprets this as referring to 'fields' or 'lands,' as the farmer says. This affords occasion for an interesting explanation of the passage, which, regarded merely as an illustration, may well be partly correct. The meaning of ἔργον here, as in the above quotation from Pseudo-Hippocrates, is simply concrete 'thing.' Page 184, the words in the translation 'all things being indeterminate' should read 'if all things be indeterminate.' Page 187, Professor Newbold accepts Meineke's emendation ἰσολαχῇ for the MS. ἰσوتاχῇ. The word is open to suspicion; but if it be accepted, it must be interpreted differently from Diels and Newbold. The reference is, I think, clearly to the Pythagorean συστοιχίαι, to which the words ὅμοια καὶ

¹ Cf. Artemidorus IV. 1, οὐδὲ ἐνδέχεται τὰ γε οὕτως ἀλλήλων κεχωρισμένα σωματοποιεῖν καὶ εἰς ἓν συνάγειν.

δόμωλα unmistakably point. If *ισολαχῇ* be accepted, it should be interpreted accordingly; but I should rather read *σίσταιχα*. The passage has a wider application than Professor Newbold gives it, as is clear from the words *κόσμος* and *κοσμηθῆναι*. If this be true, then his interpretation of *ἄπειρα* and *περαίνοντα* must likewise be called in question.

This whole question is a *locus desperatissimus*. The difficulty springs in the last analysis from our profound ignorance of Pythagorean arithmetic. As Tannery long ago pointed out, arithmetic with the Pythagoreans, as with Plato, was a body of curious speculations regarding the numbers from one to ten, and wholly different from what we mean by arithmetic, which Plato called 'logistic.' The Pythagoreans had so many points of view, and in our accounts these several points of view are so confused by the later writers, that it is well nigh impossible to distinguish or relate them.

Page 198 following, Professor Newbold considers the phrase *τὴν δ' ἀλλήλων χάρησιν*, and explains it by reference to the triangles and squares inscribed in the zodiac. I should not wish to seem to cast doubt upon the explanation there suggested: for it seems to me the best part of Professor Newbold's article. But I do not believe that it is the only explanation of the passage. The 'reciprocal interpenetration' of the odd and even could be, and doubtless was, explained also by reference to the unit, which as the *ἀρτιωπέρισσιν* combines in itself the properties of the odd and the even. From certain points of view the unit is the desiderated Harmonia. The phrase *τὴν δ' ἀλλήλων χάρησιν* points to the problem of the one and the many as it was considered by Heraclitus, Empedocles and Anaxagoras. How far the Heraclitic *πάντα χωρεῖ* may have influenced the phrasology of Philolaus one can only guess.

W. A. HEIDEL.

WESLEYAN UNIVERSITY.

JOURNALS AND NEW BOOKS

ZEITSCHRIFT FÜR PSYCHOLOGIE UND PHYSIOLOGIE DER SINNESORGANE. February, 1906, Band 4, Heft 1. Abteilung für Psychologie. *In Sachen der Annahmen*: A. MEINONG. — A reply to the criticisms of Professor Marty in defence of 'assumptions' as an elementary mental function. *Psychophysischer Parallelismus und ein bischen andere Erkenntnistheorie*: E. BLEULER. — The term psychophysical parallelism is used to designate: (1) a principle having merely an empirico-psychological significance, so Wundt, and in this use the principle is of little value; (2) the cruder and original view, which alone deserves the name, of a point to point correspondence between two disparate series, leading logically to occasionalism or extreme idealism, for the physical series has only a relative hypothetical reality; (3) the identity theory of Spinoza, Fechner and Mobius, against the last named of whom this criticism is directed. The term parallelism is incorrectly applied in this last form, for there is but one series, though the physical series is silently

postulated. *Untersuchungen über psychische Hemmung* (Vierter Artikel): G. HEYMANS. — The suppression of sensations by other sensations of the same quality (intensive contrast). Criticism of the hypothesis of positive as well as negative contrast-effects and an analysis of the reasons for the conflicting results of Hess and Pretorius, Köhler and Ebbinghaus on visual contrast. Result of analysis shows that an investigation must see to (1) that the experiments are carried on in a dark-room, (2) in the case of successive presentations of stimuli, that after-images are guarded against by proper time intervals and variations in the series, and (3) that the field to be compared is on a black background. *Merkfähigkeit, Gedächtnis und Association*: KURT GOLDSTEIN. — The general object of this study is to determine the effect of primary defects in the insane on other mental processes and to compare the different forms, congenital and acquired, of insanity. In particular it is an investigation of memory and its relation to association. Statement of methods, with results for association. *Zur Kritik des Problems der Aufmerksamkeit*: BERTIL HAMMER. — Reply to the criticisms of Seashore. *Literaturbericht*.

ANNALEN DER NATURPHILOSOPHIE. April, 1906, Band 5, Heft 2. *Ueber die Zweckmässigkeit in den pathologischen Erscheinungen* (pp. 137–201): W. BIEGANSKI. — Four historical changes of opinion on this subject are noted preliminary to the discussion of modern opinion. All purposive pathological phenomena belong to the compensation processes, of which four classes are defined and fully illustrated. How have these compensation processes come into existence? Not through individual and fortuitous variation and selection, but because of the necessary constitution of single-celled organisms. Purpose is not merely one way of looking at phenomena, but means the consideration of the phenomena in a system in the light of their relation to the equilibrium of that system; it exists when the source of a need is at the same time the source of the satisfaction. Purposiveness requires the same experimental verification as causation. *Beiträge zur Energetik der Strahlenergie* (pp. 202–215): VL. VON TÜRN. — A technical demonstration that radiation can be expressed without contradiction in terms of energy. *Untersuchungen über die Prinzipien des Rechtes* (pp. 216–261): A. BOZI. — The chief principles of law are presented under the two classes of the deductive and inductive; and in connecting these two elements the writer concludes that continual change in legal procedure and principle is necessary to the overcoming of contradiction between the deductive and inductive elements; so that the amplification of legal process must not be looked on as a weakness of civilization. *Neue Bücher*: W. O.: H. Höffding, *Moderne Philosophen*. R. Avenarius, *Der menschliche Weltbegriff*. K. Bertels, *Die Denkmittel der Physik*. L. M. Hartmann, *Ueber historische Entwicklung*. P. J. Mobius, *Ausgewählte Werke, Band V: Nietzsche*. R. Wallaschek, *Psychologie und Pathologie der Vorstellung*. J. Schultz, *Die Bilder von der Materie*.

ARCHIV FÜR GESCHICHTE DER PHILOSOPHIE. April, 1906, Band 19, Heft 3. *Untersuchungen über Spinozas Metaphysik I.*

(pp. 297-332): L. ROBINSON. - The author begins his attempt to show in detail that Spinoza's short treatise on God and man is not, as Freudenthal has maintained, a mutilated and unserviceable fragment, but that its difficulties arise from an inefficient translation, and may be overcome. *Qualitative Change in Pre-Socratic Philosophy* (pp. 333-379): W. A. HEIDEL. - Qualitative change as affecting a permanent substrate is a conception foreign to all pre-Socratic philosophy. Aristotle and modern commentators have erred through supposing that the only alternative to this conception of change is atomism. *On Kant's Reply to Hume* (pp. 380-407): A. LOVEJOY. - Kant's 'critical' view of causality as presented in the 'second analogy of experience' is precisely that of Wolff in his attempted advance on Leibnitz, save for Kant's incongruous addition of the argument based on our power to distinguish subjective from objective succession. His argument really falls back on the working value of the postulate of causation, and is, therefore, no advance on Leibnitz and no reply to Hume. *Die deutsche Literatur über die Sokratische, Platonische und Aristotelische Philosophie, 1901-1904* (pp. 411-425): H. GOMPERZ. - Special attention is given to Menzel's 'Untersuchungen zum Sokrates-Prozesse,' and to M. Guggenheim's studies on Plato's 'Republic.' *Berichte über Neuerscheinungen auf dem Gebiete der Geschichte der arabischen Philosophie* (pp. 426-446): M. HORTEN. - Brief accounts of several publications, within the last twenty-five years, of important Arabian texts. *Die neuesten Erscheinungen. Zeitschriften. Eingegangene Bücher.*

ZEITSCHRIFT FÜR PHILOSOPHIE UND PHILOSOPHISCHE KRITIK. July, 1906, Band 128, Heft 2. *Einige Gedanken über die Organisation des Ideenreiches, mit kurzem Hinblick auf die platonisch-aristotelische Idee* (pp. 113-138): R. REIMANN. - The idea is creative, created and final. In Plato and Aristotle it creates the world, in Hegel it creates only a thought-picture of the world. The created ideas, which are also creative in their sphere, are of three types, personal, impersonal and abstract. Ideas can work upon matter because from infinity the latter embodies an ideal element of lower grade. Illustrations of the idea as final. *Das Wirkungsprinzip der Reklame* (pp. 138-154): B. WITICO. - Advertisements appeal to men against their better judgment not by false argument, but by first catching the eye, and second, utilizing man's instinctive receptivity for a new ready-made judgment presented without question for his acceptance. *Von der ästhetischen Formen der Raumanschauung* (pp. 154-167): H. PUDOR. - The psychology of architectural effects traced to the first principle that contemplation of erected objects is from the earth upwards, producing the illusion of lengthened vertical lines. *Quellen und Wirkungen von Jacob Boehmes Gottesbegriff* (pp. 168-189): A. BASTIAN. - Boehme deceived himself in denying any human source of his idea of God. His technical terminology is copied from Paracelsus; his conceptions also were freely taken from the Bible and from church doctrine as well as from Eckhardt and Nicolaus. *Rezensionen*: F. Hartmann, *Die Weltanschauung der modernen Physik*:

W. STERN. O. Siebert, *Geschichte der neueren deutschen Philosophie seit Hegel*: H. SIEBECK. B. Croce, *Ästhetik als Wissenschaft des Ausdrucks und allgemeine Linguistik*: H. T. LINDEMANN. F. Überweg, *Grundriss der Geschichte der Philosophie*, II.: H. SIEBECK. J. M. Baldwin, et al., *Dictionary of Philosophy and Psychology*, I. and II.: E. ADICKES. *Selbsttausteige. Notizen. Neu eingegangene Schriften. Aus Zeitschriften.*

Congress of Arts and Science, Universal Exposition, St. Louis, 1904.

Edited by Howard J. Rogers, A.M., LL.D., Director of Congresses.

Vol. V. *Biology, Anthropology, Psychology, Sociology.* Boston and

New York: Houghton, Mifflin & Co. 1906. Pp. xi + 885. \$2.50 net.

Croce, Benedetto. *Ciò che è vivo e ciò che è morto della filosofia di Hegel.*

Studio critico seguito da un saggio di bibliografia Hegeliana. Bari:

Gius. Laterza & Figli. 1906. Pp. xvii + 282.

Del Vecchio, Giorgio. *Su la teoria del contratto sociale.* Bologna:

Ditta Nicola Zanichelli. 1906. Pp. 118.

Fichte, Johann Gottlieb. *The Vocation of Man.* Translated by William

Smith, LL.D., with biographical introduction by E. Ritchie, Ph.D.

Chicago: The Open Court Publishing Co.; London: Kegan Paul,

Trench, Trübner & Co. 1906. Pp. xii + 178. \$0.25 (1s. 6d.).

Ribot, Th. *Essay on the Creative Imagination.* Translated from the

French by Albert H. N. Baron, fellow in Clark University. Chicago:

The Open Court Publishing Co.; London: Kegan Paul, Trench,

Trübner & Co. 1906. Pp. xix + 370.

Saïtschick, Robert. *Französische Skeptiker: Voltaire—Mérimée Renan.*

Zur Psychologie des neueren Individualismus. Berlin: Ernest Hof-

mann & Co. Pp. 304.

Saïtschick, Robert. *Deutsche Skeptiker: Lichtenberg—Nietzsche.* Zur

Psychologie des neueren Individualismus. Berlin: Ernest Hofmann

& Co. Pp. 239.

NOTES AND NEWS

COMMENTING upon the neuron theory, and the discussion it has evoked, the *Athenæum* of September 1 says: "The controversy on the neuron theory still continues, and those interested in it will find a good summary of the matter in Dr. Léon Frédéricq's 'Revue Annuelle de Physiologie,' published, as usual, in the *Revue Générale des Sciences*. Professor Ray Lankester perhaps gave it a fillip when he alluded, in his presidential address to the British Association, to the fact that the excitation of one group of neurones is often attended by the concurrent inhibition of another group, as in the reflex flexure of the knee, when the motor-neurones of the flexor muscles are excited, and those of the extensors inhibited. Dr. Frédéricq seems to think that certain facts of the self-restoration of nerves which have been injured by disease or

accident appear to point to the conclusion that the nerves of the periphery may come into being on their own account, and independently of the central nervous system, which would, as he states, rather cast doubt on the existence of the neurone as an embryological unit. Yet, however this may be, the neuronie hypothesis seems for the present to coordinate more facts, and to give a better account of all the phenomena observed, than the rival theory of Bethe and Apathy, which would convert the nervous system into a network of what they call 'Neurofibrils,' the nerve cells being only the passing of crossing places of these fibrils."

THE records of the University of Koenigsberg contain an interesting report, according to the *Vossische Zeitung* of Berlin, of the salary paid to Immanuel Kant at the time of his death, in 1804. Kant's service to the university as senator, as professor ordinarius, and as senior of the faculty of philosophy, with 'extraordinary' additional emoluments, yielded him an income of 749 thaler, 23 groschen and 10 pfennige. As professor of metaphysics and logic he received, in addition, forty-four bushels of rye and eight cords of wood.

THE 'International Scientific Series,' published by Kegan Paul, Trench, Trübner & Co., of London, has taken a fresh start under the editorial direction of Mr. F. Legge. A work on 'Body and Brain' by Dr. A. Binet is announced, and Professor Lucien Poincaré will contribute a volume on 'The Evolution of Modern Physics.'

STUDENTS of the logic of elementary mathematics may be interested in 'A College Algebra' (Ginn & Co.), by Professor Fine, of Princeton. The first seventy pages deal with the theory of the number system, and the entire work is a model of logical exposition.

PROFESSOR G. V. N. DEARBORN, of Tufts College, has been appointed lecturer and instructor in the relations of body and mind in the Sargent School of Physical Education, Cambridge.

WILLIAM J. NEWLIN, Ph.D. (Harvard), has been appointed associate professor of mathematics and philosophy in Amherst College for the current year.

PROFESSOR KUNO FISCHER has been forced by ill health to resign the professorship of philosophy at the University of Heidelberg.

PROFESSOR HYSLOP is preparing a volume to be called 'Borderland of Psychical Research.'

MR. F. C. S. SCHILLER, tutor at Corpus Christi College, has received the degree of D.Sc. from Oxford University.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

SPACE AND REALITY ¹

II. REAL SPACE

We have so far examined into the presuppositions of space construction and found that these must be expressed in biological terms. We next took up the ontogenetic side of our space perception and found that the content, in so far as it exists, is probably concomitant to the going on of the growth process, determined by the phylogenetic tendencies and intra- and extra-organic stimuli. What actual content there is, moreover, must be determined by statistical inquiry, and not *a priori*. We then examined into geometrical construction, and found this to be a matter of logic and to be conducted as any free logical inquiry. The ideals, however, of mathematics, as other ideals, seem to have a phylogenetic basis. Lastly we examined into the conception of space, as perspective, by metaphysical idealism. When regarded as phenomenal we had no reason to quarrel with this view. When, however, translated into terms of absolute idealism, as by Fichte, space loses its significance.

We must now turn to the other aspect of our concept and try to discover what the real space zero means or what difference it makes in our accounting for the facts of experience.

The series aspect of space, we have agreed, is subjective construction. Points exist only as we posit them as the ideal pegs on which we hang our qualitative world. To make up a real world of such ideal points is absolute nonsense. But what remains after we abstract from this series character? Nothing at all, is the answer. But that nothing we shall try to show is not a merely ideal nothing, but a real nothing which conditions not only subjective construction, but real action as well.

First of all such a space zero is perfectly conceivable. The modern study of number has shown that the conception of nothing does

¹This paper concludes the author's discussion of this subject. His first paper, under the subtitle of 'Ideal or Serial Space,' appeared in this JOURNAL, Vol. III., No. 20.

not equal no conception. It is not 'unthinkable' and 'unspeakable,' as Parmenides and Melissos dogmatically maintained in regard to just the space zero. The zero of the number series is of basic importance in the whole conception of the number series; and as the number series is not intelligible without it, the number zero possesses all the reality of the series which it limits. But we can conceive empty space, as we conceive the number zero, as a limit by abstracting from the contents of space or the things in space. Hence space must be as real as the things in space. It is a matter of surprise that though the importance of the zero concept for number has received so much attention in recent times, the importance of the space zero, which both chronologically and ontologically is more fundamental, should have been ignored. But the reason for this can be found in the fact that since Kant thought has been more interested in its own machinery than in its objective conditions.

Once having shown the conceivability of empty space we must prove its existence, as we prove the reality of any other concept, by showing its convenience for describing the facts of experience. The criterion of the reality of our concepts is everywhere the same: Does the concept work? Does it make experience simple, consistent and intelligible? Must we act as if it were so?

We must conceive of empty space as the precondition of filled space, as the limit of exhaustion of filled space, which, moreover, we can approximately get. If by exhaustion we could get the space zero without content or resistance, it must have been real all the while. It is not necessary to the reality of spatial non-being that it should actually exist separately or empty. If we can approximate it as a limit, it must be just as real as though it existed separately. We can not get the quality of blue separate from all other facts, yet we do not therefore deny its existence. It is convenient, at any rate, to conceive of a space-nothing, whether empty or filled. Only with reference to it can relative emptiness or relative resistance have meaning. To illustrate, let us take this instance suggested by my friend, Dr. Bruce Hill: Hydrogen gas is the only gas that passes through platinum. Suppose, then, that you have a vessel of platinum filled with pure hydrogen gas. Let this escape, and what is left?

The conception of a space zero has proved convenient as a limit in conceiving Newton's first law of motion. While this law is an abstraction, it must be remembered that such abstraction is empirically possible to a certain extent. The abstraction, therefore, is not merely ideal. On the contrary it is real non-being which we find it convenient to conceive in treating of resistance and motion. I can hardly see how a merely ideal limit could make any difference to actual movement. Thus points, lines and surfaces, while legitimate

mathematical abstractions, neither obstruct nor facilitate movement. Even if we have not been able to get absolutely empty space we can, as already shown, approximate to it and predict definitely what would happen if we could get it. The only problem is: Are we compelled to assume such a zero in order to account for the facts of experience? Having assumed such a real zero, we find it easier at any rate to account for the forms of motion as they actually take place owing to the resistance and diversity of the physical world. The convenience of the conception must indicate that it has a foundation in the real, otherwise it could not be empirically approximated as well as hypothetically useful. It is the real limit which makes our conception relevant.

Even geometry in assuming free mobility as one of its few remaining axioms shows that it means by space something more than series, for free mobility is the very precondition of space construction. If, after abstracting from things, space itself offered resistance, geometry would not be possible. Even in geometry, therefore, non-being space is presupposed as objective to serial construction.

This conception of space explains distance, which can not be explained as a property of things and yet conditions the actions of things. By distance I do not presuppose our geometrical concepts such as the straight line. A straight stick is more convenient than a crooked stick for social measurements, but in either case we presuppose the separateness or side-by-sideness of perceptual processes. A yard stick, while a convenient unit, does not create the distance it measures. This is different, moreover, from the ideal distance or stretch in our conception of series, for example. Distance transferred to mental processes and their externality is only a figure of speech. Space distance is the only real distance we can conceive. All other distance or stretch depends upon this. To make number distance or tone distance possible, we must spread out our qualities in space. Except for space distance all qualities or facts would have to coalesce or interpenetrate. Empty space, then, must be real, if pure distance must be conceived as real.

I can not see how the conception of distance, with all it implies for reaction on every plane of existence, can be reduced to a property either of physical things or of selves, yet without this fact both acceleration and the limitations of intersubjective communication become unintelligible. Wills, appreciative selves, are not extended, but are limited by conditions of separateness, not of their own making, but which must be met and can not simply be brushed aside as illusions. Here lies the difference between the derivative conception of distance or stretch in series such as the number and tonal series. Here the distance or stretch is determined by the will, is comprised within its

purpose. A long stretch or a short stretch will serve equally well to spread out its contents; and as the termini are simply of the will's own positing, they put no condition upon the will as regards passing from one to the other. They are only ideally external within a unity of consciousness which claims them equally and *simul*. Not so with space distance. Here the distance limits the will and the realization of its purposes. The distance which separates Kansas and Harvard and limits my intercourse with its group of divine philosophers is not the creature of my ideal positing simply; my ideal bridging of it does not remove the limitation to my will as in the case of two points in a series. If it is posited by me, it is because I am compelled to do so, and no ideal enlightenment from my Kantian friends serves to sweep the limitation away. In short, what makes other egos and things objective to me, *viz.*, their independence of my subjective purposes, makes also space as distance objectively real to me. As I must 'acknowledge' other egos, so in order to realize my practical purposes I must 'acknowledge' space. Space is the condition of the externality of egos and things, whether they can be 'acknowledged' as egos or not. It is not a subjective, but an intersubjective condition, limiting the communication and cooperation of egos. Within the ego space exists at most only figuratively, as when we speak of the space of our ideas.

I know we often speak, in this age of electricity, of annihilating distance. It is true that social sympathy and unity are possible in this age to an extent they never have been before. Humanity by means of the telegraph can live a common life to a marvelous degree. And yet it is loose language even so to speak of the annihilation of distance, for distance does make a decidedly measurable difference to our communication. However much the conditions of social life have altered since the days of the proximity of savage tribal life, still it makes a difference to the kind of relations we can have with each other that we are separated by distance.

Our space conception must be such in the end as to satisfy our space intuition. While we must not invoke intuition as explanation, yet where our intuitions, as in our general reactions upon our environment, are due to survival selection, they have, as Spencer says, well-nigh the force of demonstration and must not be lightly brushed aside. While the space intuition can not be expected to separate sharply between the physical and spatial character of our world, and while in it we find such physical categories as three-dimensionality and continuity mixed with such spatial categories as non-resistance and distance, yet the unspoiled space intuition always has insisted upon an ontological non-being as over against physical and subjective beings. Hence the natural part the void plays in early

cosmogonic and physical theories. However much cruder the tools of Leucippus and Democritus than those of Kant, yet their conception of an ontological nothing gives a more fundamental character of the space concept than the aspect of serial construction emphasized by the Kantians.

This conception of space greatly simplifies the problem of the attributes of space and hurls the objections, with which the concept of space in the past has been burdened, back into the realm of the subjective, the realm of tools, where they belong. Thus empty space can not be said to be extended. Things are extended, not space. Extension like color is the relation of energy to our psychophysical organism. To speak of a colored energy or, to use a known type of energy, a colored will, would be as sensible as speaking of extended energy or extended will. Extension has probably its physiological basis in the number of physiological elements, peripheral and central, which are stimulated, as color has its basis in a certain retinal structure. It is a relation, therefore, an equivalent for certain changes, not an entity, and in so far as relations for the time being are real, so extension and color must be regarded as real. But they are physical qualities, not space qualities. When we once get rid of the notion of energy as extended and come to regard extension as a subjective equivalent for a certain form of irritation, the superstition against action at a distance and the absurdly contradictory ether medium will probably vanish. Energy is where it does work. There is nothing against energy radiating or connecting up in empty space but the prejudice that extension has a different sort of objectivity than color or taste. The conception of continuity likewise will be taken out of court so far as space is concerned. The spreading or radiating of energy creates its own continuity. A continuous nothing is as meaningless as a discrete nothing. The continuities and the discontinuities, the fluidities and the interferences, must be expressed in physical terms; and physics has wisely substituted mathematical equations for mythological media depending upon certain gross forms of psychological imagery hypostatized. The equations have nothing to do with whether action is due to the radiation from energizing center to center over pure distance and the resistances due to interferences of the radiations, or whether there is an extended medium, such as ether. Rays or spreadings of energy, whether with or without a medium, are at least the only physical continuity I can conceive. Centers corresponding to wills, however much simpler in character, are the only energetic discontinuities I can conceive.

The hypostatizing of a medium such as the ether medium is due to custom. In our gross sense-perception one end of a rope appears

to be of a piece with the other end. Not so if we substitute molecular action for our gross sense-continuum. Still, even then, owing to our ingrained custom, it seems uncanny, to use Mr. Hill's expression, for one thing to move another without something between.

While to speak of the transmission of energy in an *extended* medium is to confuse two different orders of being, it is still true that extension is intimately bound up with the space character, as duration is with the time character. While extended energy or extended will is what Descartes would call a confused idea, and while extensity or voluminousness is a subjective fact, yet the multiplicity of stimuli and their externality which are the necessary conditions of such feeling of extensity must, at any rate, be characters of the real world.

The question has been raised as to the relation of diversity or multiplicity to space. In answer to this I wish to say that it is possible to have distinction of qualities or properties without spatial spread-outness. The same thing or individual, in other words, may possess many qualities, all of which interpenetrate or occupy the same space. If they did not, the unity of the thing would be impossible. Thus the watch is yellow, hard, cold, round, ticks, etc. It sustains a diversity of chemical, physical, commercial, esthetic and other relations to other individuals. Psychologically this locating of qualities and relations in each other's space is no doubt the result of the law of economy. But this law itself has been forced upon us as a result of the practical necessities of adjustment. These qualities, moreover, are no less distinct because they occupy the same space. Here in the unity of the thing we come the nearest to having an ontological point, for a thing, whether conceived psychologically as a complex of qualities or metaphysically as an energetic entity capable of certain reactions, while it is in space, can not be said to occupy space. The problem of spatial externality arises only when we must 'acknowledge' different coexisting and interacting individuals, whether egos or things. This, moreover, has nothing to do with multiple selves, for in the first place these are generally successive, and we are dealing here with simultaneous discreteness. In the second place, in the case of multiple selves, the psychophysical basis of consciousness has become disintegrated or dissociated in some way, so that while we have one skin, we have really more than one space thing. What again we shall recognize as an individual depends greatly upon our selective purpose and may vary all the way from the electron to the universe.

The stock objections brought against space as quantitative and serial would one and all be irrelevant to this conception of space. Space as real zero is neither made up of parts nor a whole; it is

neither one nor many; neither continuous nor discrete; neither infinite nor finite; neither quantitative nor qualitative. These are one and all ideal constructions to manipulate processes in space. If they lead to contradictions, that only shows the crudity of our conceptual tools. It does not discredit space any more than processes in space.

Since space is not quantitative, it does not consist of spaces added to spaces, nor is it the unity of spaces. This is simply the gross imagination of minds, not accustomed to logical abstraction, who confuse sense things, barrellfuls and bucketfuls, with space. Thus the conception of a real zero-space saves us from the antinomies to which the conception of a real serial space has given rise, and shows the subjective character of the antinomies, not of space.

Even dimensionality can not be regarded as a space category. Whether the world of physical processes must be conceived of as having one, two, three or n dimensions, as having positive, negative or zero curvature, can not be settled *a priori*, but must be ascertained as we ascertain any other attribute of the constitution of our physical or perceptual world. That we arrange our perceptions according to three axes or systems of coordinates is due proximately to our being equipped with three spirit-levels, the semicircular canals, the convenience of which, however, seems to point to a certain structure of the physical world.

It has been suggested that while space can not be said to have any particular number of dimensions it still must possess dimensionality. But all that could be meant, so far as I can see, by this dimensionality in general is simply the indifference on the part of space to any particular determination, and hence the possibility of being determined by means of such a system of coordinates as the character of the physical world may require. I can not see, however, how you can have coordinates that are no coordinates in particular.

It might be objected in that case that neither can externality or distance exist without termini or facts and, therefore, that distance involves dimensionality. To this I would reply that measured or particular distance can only exist in a world of individuals, and with such a world we have dimensionality as well. That, however, does not prevent us from logically distinguishing between them and from regarding one as a physical attribute and the other as a space attribute, for while we can and must abstract the distance character and treat it as an independent variable, both in our physical equations and in our inter-subjective intercourse, we can not thus abstract the axes or coordinates from the stuff structure of our world. Dimension in general, in other words, is merely a matter of sub-

jective abstraction, while space as the condition of distance is a *forced* concept.

Space can properly be said to have only two attributes. It is the condition for free mobility and for distance. Free mobility or reversibility, though the absence of character in the sense of any positive determination, becomes an important attribute as a limit in conceiving motion. It means that space as such does nothing to things moved in space. As distance, space is not the mere ideal form of externality, but the real condition or objective possibility of the externality of things or egos. It is with reference to the qualitative and quantitative diversity of the world pure passivity, not the passivity of Plato, Aristotle or Hegel, which after all is such as to distort the pure forms or make them fall short of realization, but passivity as the absence of resistance, thus throwing the responsibility for what happens on the character of things. The only condition it imposes on things is that of distance and that condition it imposes on the world of appreciation as well as on quantitative motion.

The objections brought against empty space by Aristotle are different. They aim at the real space concept. They may be classified under two heads: those due to prejudice, or his own space concept; and *argumenta ad hominem* as against the space conception of the atomists. Aristotle's own conception of space is that of figured, continuous extension, 'the limit of the surrounding body in respect to that which it surrounds.' Hence space for Aristotle is finite, limited by the limits of the world, and conversely it becomes absurd to speak of space outside the world, or empty space. As we have rejected Aristotle's conception of space already as regards its extension and its figured character, his objections from this point of view need not detain us. They simply amount to dogmatism, not criticism. No doubt Aristotle is right that the universe of things, whether bodies or selves, is a finite affair. Science believes in a limited number of chemical substances; a limited number of stars and astronomical positions; a limited number of human beings for census purposes, etc. To speak of infinite variety or infinite attributes is simply a rhetorical figure on the part of poetical philosophers, showing at most the unchecked character of their imagination. A real infinite world, whether as regards extent or diversity, would make science as impossible as would multiple independent worlds. Facts must have a certain relation to each other, must make a difference to each other, and these relations and facts must be finite to make knowledge possible. But a finite universe has nothing to do with a finite or infinite space. Facts determine each other. The arrangement of things in space, the different

meanings, qualities and values things have are due to the relations of things to each other or the way they are connected up. Space does not determine them except as regards distance, and that would be irrelevant where there are no facts.

As regards Aristotle's criticisms of the atomists, they are on the whole well taken as *argumenta ad hominem*. Empty space does not account for motion or rest; it accounts for no tendency downward or upward; much less can it account for the different rates of motion as faster or slower in so far as you abstract from the relations of bodies. Democritean atomism, which had assumed that heavier atoms, in a void, would fall more rapidly than lighter and thus would collide and form a whirl, was not able to stand against Aristotle's criticisms; and the crude view of 'natural places' displaced the atomic whirl. Motion and differences of motion must no doubt be accounted for by the constitution of the physical world, except in so far as the conception of distance is involved in the conception of motion or communication.

This conception saves us from the absurdity of regarding space both as serial and as real, as our construction and as conditioning the world of processes. The contradictions of this position have been sufficiently battered to pieces from Zeno down. The serial must necessarily be our subjective construction, our tool for manipulating processes or facts. This position, therefore, allows for the truth of idealism. It admits the conclusions of idealism so far as it goes, but at the same time it does justice to the surd which realism has always felt to remain and the omitting of which has made idealism so ghostly, bottomless and incredible. Common sense is right, if it can only be made to understand itself.

Nor can we regard space subjective and motion objective, the half-way house of Lotze and others. If we regard motion and change as objective, we have to regard space as objective. This is true of qualitative change as well as quantitative, as the former too would be impossible without some kind of pluralism and externality. Melissos saw deeper than he knew when he maintained that if there is rearrangement there must be empty space, even though he supposed the conclusion to be absurd (taboo it really had become, and has been mostly since, to regard non-being as real) and so returned to the solid-block universe of Parmenides, which he conceived as unlimited to exclude empty space from the outside.

In explaining motion we have found empty space useful in two ways. First, it makes it possible to abstract from bodies and resistance, and so to state Newton's first law of motion. Secondly, it gives us the possibility of objective distance, which can not be reduced to the properties of things. Reactions of things, while they

are determined by the properties of things, also vary with the distance, which, therefore, can not be regarded as merely subjective. It is hard to see how mere subjective position could influence the intensity of motion. Motion in an ideal space should be consigned to the confused limbo of square circles, mermaids and centaurs.

Most important of all is the fact that this conception of space satisfies the criterion made so much of by the idealists themselves, and more than once implied in the preceding, *viz.*, that those conditions which limit and must be taken account of in the realization of purpose must themselves be real. Otherwise they would not be conditions. Space and time must certainly be taken account of in realizing our human purposes; therefore, they must be as real as those purposes themselves. If they were merely illusion, or 'mere appearance,'² then it ought to be possible to ignore them, at least after finding out the truth about them. Take space distance, for example. Our measurement of this with reference to geometrical ideals, such as the straight line, our use of a particular kind of measuring rod, such as the yardstick, must be regarded indeed as a matter of ideal selection and control. But if I live in Kansas and an important philosophical session is held in New York, or I want to see my friends across the sea, the mere declaring space an illusion does not annihilate the limitation. Intermediary processes must somehow be reckoned with; and those processes presuppose space as the condition of their externality. Thus space as distance conditions the equations of the astronomer and the joy and communion of willing selves. And so with time. No mere conversion to absolute idealism will make new wine old, will convert youth into old age or make the faded flower bloom again. I do not see how in the only world of purposes of which we know anything, it is possible to ignore the space and time limitations of those purposes. We grant that the space and time characters taken apart are meager enough when contrasted with the concrete life of feeling and willing. We are indeed in our inmost beings willing and appreciative selves. But space and time remain, nevertheless, irreducible limits to which we must adjust ourselves, if we would be sane, not deny; and in so adjusting ourselves realize our purposes.³

I do not insist upon a different reality for space than for egos

² I can not help thinking, notwithstanding the objections of the Kantians, that the psychological term illusion is a fair equivalent for Kant's 'mere appearance.' For illusion is not baseless, but it owes its character to the apperceiving subject rather than the stimulus. It is a mode of apperception, but not true of the real.

³ For the author's treatment of time, see his monograph, 'Time and Reality,' the *Psychological Review Monograph Supplements*, No. 26, also his article, 'The Concept of Time,' this JOURNAL, Vol. II., No. 14.

or things, *i. e.*, for energy, whatever form it may take. All I insist upon is that we must 'acknowledge' both. The question whether space could exist before things could only have meaning for those who, with the medievals, regard the world of things as created at a finite time out of nothing, as embodying eternal archetypes or what not. It is the province of philosophy like science, however, to investigate the constitution of the world, not its creation. The temporal priority of space to things can, therefore, have no significance for us. We can, however, abstract distance from things and must do so, both for purposes of physical science and for practical life.

If one should hold with the absolute idealist that there is only one individual, one unitary experience in which all facts are modes or qualities, one completed purpose, one simple feeling, then reality would cease to be definable in space terms. In the one blissful moment of the absolute, distance could have no significance. All I can say is that, in the only reality we know anything about, we are forced to recognize different individuals and their externality.

JOHN E. BOODIN.

UNIVERSITY OF KANSAS.

THE PRAGMATIST'S MEANING OF TRUTH

I THINK it can be safely assumed that the readers of this JOURNAL by this time know sufficiently well what the pragmatist means by truth, by a true idea. In this brief article I shall attempt to show that this meaning is not the correct one, that it is not the correct meaning of truth, even if the pragmatist's contention be admitted that truth in every case of it is useful, that every true idea does lead to beneficial consequences, to desirable experience of some sort. The proposition I shall maintain is, that in any situation in which an idea does lead to profitable or desirable experience, it is not these consequences which make this idea true, but this idea is able to lead to these consequences because it is true, and true because of something which the pragmatist overlooks. To be more specific, admitting that the true idea does always possess a practical value, does have the instrumental function which the pragmatist assigns to it, I shall attempt to show that the pragmatist has not rightly answered the question, *how* is a given idea able to lead to these prosperous and satisfying issues, *how can* it have this instrumental function?

My position can best be made clear by the study of a concrete instance. Let us suppose a sojourner in the Adirondacks is lost in one of those forests. He is without shelter and without food; and

unless he finds both he must perish. The problem in this situation is a practical one; and if this man has a true idea, it will certainly be a useful one. We will suppose this problem was solved, the true idea found; and, accordingly, my question is, in what consisted the right solution of this traveler's problem? What made this man's idea a true one? Let us analyze the situation. There was (1) the environmental conditions, *viz.*, the *forest* having a determinate configuration and extent, the house where food and shelter were, and a determinate direction or way leading to that house. (2) The man's idea, dealing with this situation, *viz.*, his idea of this environment, his idea of the situation of food and shelter, and the way he must take to reach them. (3) The man's action under the lead of an idea. (4) The resulting enjoyment of food and shelter, the prosperous issue of the idea. Now, the pragmatist must say, that this traveler's true idea was his plan of action and its issues; and that the trueness of this idea consisted in just these consequences. Had the consequences of following his idea been the failure to find food and shelter, that idea would have been a false one, and false just for that reason.

Now, what I wish to show is, that this pragmatic interpretation of the situation overlooks certain elements, the due recognition of which is indispensable to the correct understanding of the situation. The pragmatist fails to take account of the difference between the environmental conditions and the successful action which these conditions made possible; the exact position, form and extent of this forest, of the house where food and shelter were, the right way leading to it—*these* were the objective conditions in the situation, which determined the solution of the man's problem. They constituted the environment to which his action must be adjusted if it was to have a successful result; and our traveler's action was prosperous in its issues just because it was the sort of action which this environment made possible.

The pragmatist overlooks an essential element in the traveler's idea dealing with these environmental conditions; and the consequence of this oversight is, he fails to recognize that character of the idea in which its trueness consisted. Our traveler in his thought dealt first with the environmental part of the situation, and, secondly, and as a consequence, he dealt with the practical problem which this environment and his needs presented to him. The man's idea, or plan of action depended upon, was determined by his idea of the existing environment as I have analyzed it. Now, it is *this* idea which the pragmatist overlooks, and unfortunately for his interpretation, this overlooked element is of fundamental importance; it held the key to the situation; the man's solution of his problem depended upon

his idea of his environment. It was because our traveler had the *right* idea of these environmental conditions that he was able to act successfully in the given situation. Now, that which made this man's idea of his environment true, was its agreement with the actual environment. His idea was true for no other reason than that he thought or conceived this environment as it in fact was when so thought.

Our traveler's idea was not true, then, because it had beneficial results; it led to these beneficial consequences because it was true and because it was true for some other reason, *viz.*, because it agreed with the environmental conditions.

Assuming that this concrete instance is fairly representative of all cases in which there are such things as true ideas, the conclusion seems to be that the pragmatic meaning of truth does not bear the test of critical examination. Nor will the validity of this conclusion be impaired if we substitute for the realistic interpretation of the situation in our case of the Adirondack traveler an idealistic one. Let our traveler be a radical empiricist, and his real world be the world of pure experience only; in that case the environment was something real—something other than our traveler's momentary and passing thoughts; and it was this something real which determined the sort of action or experience which led to these desirable consequences, and the trueness of the man's idea was, therefore, its agreement with reality, which in this instance was the condition or order of experience. I will go even further, and suppose our traveler was a solipsist, to whom the world was his *own* experience and *his* experience only. Even in such a case if there could have been such a thing as a true idea, the truth of that idea must have consisted in something besides the *de facto* sequence of one experience upon another. In the pragmatist's meaning of truth, a relation between experiences of a more intimate sort than mere sequence is essential to a true idea. And when this relation is examined it will turn out that our solipsistic traveler had a true idea because that idea agrees with reality, which for him was the habitual or customary order of his experience. Our solipsist must have assumed a determinate character of his experience, and this character of his experience it was which made possible the right solution of his problem. So long, therefore, as anything is acknowledged to be real beyond the passing moment, the here and now, a true idea in any situation will consist in its agreement with reality, and its truthfulness will be something distinct from its *de facto* success in leading to beneficial action, or to practically useful results and satisfying experience.

JOHN E. RUSSELL.

THE TELEPHONE AND ATTENTION WAVES

A PROPOS of work now being done in this laboratory¹ in the investigation of the relation between the fluctuation of auditory attention and the Traube-Hering wave, it seemed wise to settle, if possible, the fundamental question: Is the fluctuation of attention, if there is any, of central origin, or is it due to lack of uniformity of the stimulus?

The apparatus used in some earlier experiments in this laboratory as well as by several other investigators was the tone from a telephone receiver. It seemed desirable, therefore, in order to meet Hammer's objections, to have some objective check upon the apparatus that would indicate not merely the strength of current, but the movements of the diaphragm of the telephone itself. To this end we had Max Kohl mount upon the diaphragm of a telephone, by a lever, a mirror that should magnify the oscillations of the diaphragm about three times. A ray of light was thrown upon the mirror through a narrow slit and reflected into a telescope with micrometer eye-piece, and the amplitude of oscillation of the mirror could thus be read directly. In our experiments the current was interrupted by a König 50 v. d. fork. In the circuit was a variable resistance and a milliammeter. It was possible, then, to read the current strength on milliammeter and telephone diaphragm with constant current, with a single throw, and with the regular interruptions produced by the tuning-fork.

Observation of the beam of light while the fork was running showed that ordinarily there was a perfectly constant current, and that interruptions, when they came, were in the nature of single long oscillations. There was no regular change in intensity that could in any way explain the fluctuations in sound that have been called attention waves. That there is a fluctuation of attention to the sound is the opinion of all six people who have acted as subjects for this investigation. All agree that for a time the sound is heard, then it is seemingly lost in a confused mass of sensations; and although one feels that the sound is still there, one is yet quite uncertain about it. Later, out of this uncertainty and confused mass the sound emerges and once more holds the field. The fluctuations are often hard to obtain. The zone of fluctuation is much narrower than the range for vision. In consequence the observers took from fifteen minutes to an hour to adjust the resistance to a point that would give certain and constant fluctuations. But no one failed to discover the fluctuations even in a single sitting, after a few days' preliminary practise.

¹ The psychological laboratory of the University of Michigan.

As the apparatus in question was adapted to a determination of the relation between current intensity and amplitude of vibration of the telephone receiver, and no one, so far as we know, has ever worked that problem out, in spite of the widely extended use of the telephone as a source of sound for psychological experiments, it was decided to make a few observations upon that point.

The method was as follows: All series of reading were begun with the ammeter standing at 20, and for each subsequent reading the current was reduced 1 ma. Standing at 20 a break and make in the current gave a reading of the deflection of the mirror in millimeters on the scale. The fork was started and the ammeter and millimeter reading taken under these conditions. The fork was then stopped with the hand, the current reduced 1 ma., and the reading, as above, taken, and so on. The different series were recorded independently of one another in order that the values of one series might not influence the judgment of values in another. The following table gives the results found for three typical series, though a graphic representation which shows by actual demonstration that these values lie in almost a straight line would be preferable..

Ammeter Reading. Fork not Running.	Millimeter Reading. Fork not Running.			Ammeter Reading. Fork Running.			Millimeter Reading. Fork Running.		
	I.	II.	III.	I.	II.	III.	I.	II.	III.
20	10	10	10	11	13.5	11	15	18	15
19	9.5	9.5	9.25	10 +	12.75	10 +	14 +	17.25	14 +
18	9	9	8.25	9.75—	12.25	9.75 +	13.25	17	13.75
17	8.5	8.25	7.5	9 +	10.5	9.25	12.25	15.75	12.75
16	7.75	7.5	7	8.5	10.25	9 —	11.25	15	12
15	7.25	7	6.25	8	9.25	8.5 —	10.25	14	11.5
14	6.75	6.5	5.75	7.75 —	9 +	8	9.75	13.75	10.5
13	6	5.5	5.25	7.5 —	9 —	7.5	9 —	13.5	10
12	5.75	5 +	5 —	7	8	7	8.25	11.5—	9
11	5 +	4.75	4.25	6.5	7.75	6.25	7.25	11	8
10	4.75	4.25	3.75	6	7	5.5 +	7	10	6.75
9	4.25	3.75	3 +	5	6.5	5 +	6	8	6
8	3.25	3 —	2.5	4.25	5.25	4.75	4.25	6.25	4.75
7	2.5	2.25	2	3.75	4.75	4	3.5	5	3 +
6	2	2	1.75	3.5	4	3.5	3	4	2.25
5	1.5	1.25	1.25	3 +	3.5	3	2.5	3.5	1.5
4	1	1	1	2.75	3	2.5	2	2.25	1
3	.75	.25	.75	2	1.75	2.25	1	.75	.5

No attempt at averaging the results has been made. As will be noticed, each of the three series is different slightly, although consistent in itself. This variation is apparently unavoidable in any work that depends upon contact make and break for its oscillations. Lord Rayleigh, it will be remembered, was constantly troubled by it in his work on self-inductance. In our results the variation is un-

doubtedly due in large part to slight changes in the position of the platinum wire that furnished the oscillating contact on the fork. We have contented ourselves, then, with giving three typical series of results that indicate at once the constancy and variability of the results. It will be noticed that there seems to be a slight relative gain of energy for the larger currents in the telephone, which makes the series increase more rapidly than the ammeter readings.

We have not attempted to fit a curve or an equation to the results, but leave them in the raw state. It will be seen that it is only very roughly that the intensity of the sound may be regarded as a function of current. Any even fairly delicate work would require correction. We have not considered here the loss of energy in the air between telephone plate and ear, which might conceivably still further modify the results.

GEORGE L. JACKSON.

UNIVERSITY OF MICHIGAN.

DISCUSSION

METAPHYSICS, SCIENCE OR ART

IN a recent number of this JOURNAL¹ Dr. Ewer contributes, under the above title, comments upon the art-character of metaphysics, in which he devotes some notice to an article of mine on 'Metaphysics as a Branch of Art.' I appreciate the courtesy of the criticism, but regret that I can not agree with his corrections.

1. Dr. Ewer holds that "The purpose of metaphysics is the purpose of science, not the purpose of art. The metaphysician aims at the discovery of truth; the artist at the production of beauty. The one constructs an idea which, he hopes and believes, correctly represents reality; the other makes a reality which expresses an idea. . . . His purpose [the metaphysician's] is to make a mental copy of reality in its important features and principles, and the thing has metaphysical worth only as it is a correct copy."² And the further distinction is made that metaphysics aims to tell the truth, whether pleasant or not, whereas art frankly seeks to please. Now, I believe that Dr. Ewer is quite right in adopting, as he does here, the pragmatic criterion of 'purpose.' The purpose or end of metaphysics and of art should be the test of what they are; only I do not agree to the particular purposes which are assigned. To say

¹ Vol. III., No. 20.

² Pp. 546-7.

that the aim of metaphysical thought is to copy reality is to make that thought mechanical and purely representational. I leave others to take vengeance of this sin,³ and I wish to point out that if the artist is to make a reality which expresses an idea, he, too, is but a mechanical device for reproducing a model, namely, the idea, which is already set for him. This scarcely seems to do justice to the creative element in art. Nor should I agree that the artist always seeks to please, while the metaphysician aims to tell the truth, whether pleasant or not. The artist rather seeks to interest, to impress and to stimulate, and that, too, whether we like it or not. Does Tolstoi or does Hardy ever hesitate to let us have an unpleasant truth if he thinks we ought to get it?

2. Dr. Ewer does not find that my analysis of categories into motor attitudes, and hence emotions, is supported by his introspection, and he could not, therefore, of course, agree with conclusions based upon it. He finds that 'speculation, upon the nature of time or space for instance, may proceed without other emotional consciousness than satisfaction in the search for truth.'⁴ All I can say is that when I make the attempt myself to appreciate or at all realize the meaning of space and time or any abstract category, and when I witness the contortions of others who are trying to be intelligible upon these subjects, I can not but envy the Brahmic calm of one who feels only the 'satisfaction in the search for truth.'

3. One of Dr. Ewer's citations from my article seems to me somewhat indiscriminately severed from its context. He says: "And finally, the charge that Augustine's solution of skepticism and Kant's ethical prescription have no result upon overt action seems to me in the plainest contradiction to facts."⁵ Whereas my text reads:⁶ "... Or take Kant's prescription of 'simple conformity to law in general.' What result would that have upon overt action? Some result at some time, of course, but nothing that we can immediately indicate." The criterion in this passage, as in the discussion which precedes it, is immediacy and not overtness, as Dr. Ewer has assumed it to be.

4. Finally, it would have been more satisfactory if Dr. Ewer had stated somewhat explicitly what the resemblance is between metaphysics and science. He admits and emphasizes the art-qualities in metaphysics, and he says that metaphysics is not science in the ordi-

³ Especially in Moore's monograph, 'The Functional vs. the Representational Theories of Knowledge in Locke's Essay,' this point of view seems to be adequately met, not to say swallowed.

⁴ P. 547.

⁵ P. 548.

⁶ This JOURNAL, Vol. III., No. 14, p. 370.

nary usage of the term. But in what usage of the term it is science he does not reveal.

KATE GORDON.

TEACHERS COLLEGE.

REVIEWS AND ABSTRACTS OF LITERATURE

La théorie physique; son objet et sa structure. P. DUHEM. Paris: Chevalier & Rivière. 1906. Pp. 450.

This volume is the book-form of the series of articles which first appeared in the *Revue de philosophie* for 1905.

The author is recognized as one of the foremost authorities and scholars in his line; from him there have come a number of highly valued and exhaustive treatises on chemical mechanics, on hydrodynamics and on electricity and magnetism, as well as other and more simple works written with a distinctly didactic purpose. One of the most important characteristics of all of this systematic work in these diverse fields is the acceptance and use, in each of them, of certain fundamental principles by which a unification or 'natural classification' is brought into the treatment of the various classes of physical phenomena. That principle which in particular enables him to do this is the generalized 'second law,' which was developed first in thermodynamics, and according to which, in its extended form, every energy-transfer 'goes out' from the higher potential to the lower, provided such a potential difference is uncompensated, etc. The author thus allies himself closely with Nernst, Gibbs, Mach and a number of other leading physicists. From time to time he has appeared as an opponent of Poincaré concerning various questions.

This present work of his, together with some other contributions, places him in that rapidly growing group of scientists who look at their science retrospectively, analytically, broadly, or, as one might say, philosophically. In reading it one feels that he has before him the exposition of a master, of one who not only knows and uses the technique, but who also sees the logically and historically significant thing, and who speaks, therefore, with well-justified confidence. However, in this review it is possible only to indicate a few important main points out of much that is of great value in the matter presented.

The volume consists of two parts, the first dealing with 'the object of physical theory,' the second with its 'structure.' The first part is divided into four chapters, and each of these into a number of sections.

In Chapter I., in which there is discussed the relation between 'physical theory and metaphysical explanation,' M. Duhem finds that neither historically nor logically is the former subordinate to the latter, but that it is autonomous. To state simply just what the author means by 'physical theory' is at this point impossible, since, indeed, the elucidation of this is the purpose, in great part, of his subsequent discussions. By 'metaphysical explanation' there are referred to, as it becomes clear later, views as to the ultimate nature of physical phenomena, assumptions

as to something behind sense-given data and hidden from immediate perception. Metaphysics, he finds, has been sterile as a source from which to draw principles for physical theory; but he does not refer here to such *a priori* and constitutive principles as those of Kant's critique.

Chapter II. The purpose of physical theory is, indeed, not explanation; rather, physical theory is a system of mathematical propositions deduced from a small number of hypotheses, and its purpose is to represent 'as simply, completely and exactly as possible an ensemble of experimental laws.' Between theory and experimental laws a fairly exact distinction is made, here and subsequently. Four 'operations' are necessary to theory: first, the choosing of simple properties and the establishing, by measurement, of a correspondence between these and mathematical symbols; measurement gives for each physical property a numerical value of its sign. Secondly, hypotheses must be chosen as principles of deduction, by which the various kinds of quantities are brought into relation. Thirdly, there is the mathematical development, in which the various hypotheses of a theory are combined according to the rules of mathematical analysis. Fourthly, the consequences thus drawn can be translated into judgments concerning physical properties; if it be found that these judgments, when compared with experimental laws, agree approximately, then has theory fulfilled its purpose.

Chapter III. Such a theory—and here is an important point methodologically—constitutes a *natural classification* of experimental laws; thereby do their real affinities, their ontological relations, become known, not, however, in a manner which consists in or is satisfied by the formation of images and the construction of models. The purpose of theory is, then, to condense, to classify, to predict. But do not these constitute explanation? No! 'Something behind the senses' is not thereby gotten at, but rather, by an analysis and comparison made by mathematical means, there are discovered common properties which can be treated and known only by symbolic methods. This is called by our author representation or description, and constitutes the autonomy of physical science.

Chapter IV. Not all men, however, can 'comprehend' such an abstract theory; some must present things as seen or touched, and, therefore, they construct models for the details of theory. This characterizes the English physicist in particular, with his predilection for mechanics and explanation. On the other hand, for the French and Germans a physical theory is a logical system rigorously deduced and satisfying reason rather than imagination; if algebra is used, it can be replaced by logic. Starting with, for example, two categories of distinct phenomena, within the realm of theory it may be found that the fundamental algebraical equation of one is identical with that of the other; each, therefore, helps to 'clear up' the other.

The second part consists of seven chapters.

Chapter I. It may be difficult to get such a mathematical physics, logically rigorous, etc., but it can be accomplished by the use of symbolic methods. Each idea can be represented by a sign, and so defined unam-

biguously; each phase of reasoning can be replaced by an operation which combines signs according to fixed rules. For this it is necessary that each notion should have a numerical value, each physical attribute be signified by a numerical symbol. Here the well-known distinction is made, that physical phenomena are both *extensities* and *intensities*. To the former the associative and commutative laws are applicable; the symbolic addition $A + B + C + \dots$ can be replaced, through the medium of measurement of length, surface, volume, etc., by real arithmetical addition. On the other hand, intensities can not be 'summed' or analyzed in this way. 'Each intensity of a quality has its own individual character'; it does not contain as an integral part the lesser intensity. However, contrary to the view of some physicists that their science deals only with extensities and that these are the realities behind the qualities as appearances, this does not make it impossible to express the various intensities of a quality by numbers. For physical theory represents sense qualities by signs or symbols; these are algebraical; they are made numerical by measurement. The means for this is a *scale*, which is the quantitative effect of a qualitative cause. Thus the intensity of a quality can be represented adequately by a numerical symbol. Then an algebraical treatment is possible; the scale mediates the substitution of numbers, which can be added, although they refer to intensities which can not be. In this way physical science can be built up without any dependence on hypotheses 'as to the nature' of phenomena; such a physics is descriptive, 'representative,' autonomous.

Chapter II. But, proceeding in this manner, a minimum number of simple irreducible qualities should be made use of. What is the criterion for these? Duhem's answer to this is important philosophically. Instead of drawing the criterion from philosophy, as does explicative physics, one should let this result from autonomous procedure. It is not known beforehand what qualities are primary; this is a relative term, meaning 'not yet reduced.' In illustration there is cited the reduction of light to an electromagnetic phenomenon. The geometrical symbol for light is a curved line; treating this mathematically, its components, etc., make it possible to write certain equations to partial derivatives so that the empirical laws of propagation, reflection, refraction and diffraction are 'classified' with an admirable brevity and order. Proceeding in an analogous way for dielectrical polarization, it is finally found that the equations for this have the same form, the coefficients the same numerical value, as do those for 'luminous vibrations.' The conclusion is that 'light is not a primary quality,' that 'light vibration' is nothing else than a dielectric polarization periodically variable.

Chapter III. treats of 'mathematical deduction'; the rôle of this is the development of that 'edifice' whose foundation is the measurement of qualities and the choice of hypotheses. It forms an intermediate operation with the concrete at either end, and proves useful or not, according as the conditions started with enable prevision.

Chapter IV. presents a standpoint which would be of great value to

those extreme empiricists who would have all physical science consist only in 'getting at the facts experimentally' and would exclude all theory. Our author shows that the 'experience' of the physicist is not simply observation, but is also its theoretical interpretation. Instruments must be used, and these can be constructed and the results which they give can have a meaning only in the light of theory. Words like volts, electromagnetic force, etc., do not express directly an object visible and tangible; the scientist's language presupposes theory. Instruments can be used only if it is possible to substitute for concrete objects a representation, abstract, symbolic, schematic, and to submit this combination of 'abstract' representations to a deduction and calculation which imply adhesion to theories. Only in this way does the interpretation, *i. e.*, the meaning, of an experiment become possible. By the use of the concrete instrument before him the physicist gets definite numerical values for certain symbols created by theories; but over against this there is 'in his mind' the 'ideal' instrument, and it is upon this that he reasons.

Chapter V. deals with the character of a physical law. "Laws are symbolic relations." They transcend themselves, for between symbol and thing a correspondence is established by means of instruments, thus implying theory. "Strictly speaking, a law is neither true nor false, but approximate." For each series of facts there may be an infinity of laws, and conversely. Because it is both approximate and symbolic, every physical law is provisory and relative; by progress it gains in precision, and since the symbols may prove too simple to represent reality completely and adequately, it demands continual retouching.

Chapter VI. Under what circumstances is physical theory confirmed? For this confirmation a twofold apparatus, concrete and ideal (schematic), is necessary. But, since both the concrete instrument and the interpretation of the results gained by it, etc., imply adhesion to an 'ensemble' of laws, in the event of failure to confirm, not one law but the ensemble is shown to be at fault or to require modification and retouching. For this reason the 'crucial experiment,' which would proceed by eliminating all hypotheses but one and testing this one, is impossible; this elimination can not be practised. The only experimental control which is not illogical consists in comparing the entire system of physical theory with the ensemble of experimental laws and *appraising* if the former represents the latter in a satisfactory manner.

In the development of physical theory, that which the author has called the third step, use must be made not only of symbols and of logical laws and algebraic rules, but also of postulates. The selection of these is, to a certain extent, arbitrary; there must be no contradiction among them; but neither they nor the intermediate steps of the development which is made by their use need seek the direct control of sense experience. The 'operations' of the development have no 'physical sense.'

Chapter VII. What, then, determines the choice of hypotheses? The condition is not that they should have a 'physical sense,' nor that they should give the 'nature of things.' And they are not purely inductive

laws, for pure induction is impossible. Rather, hypotheses should be so chosen that by their use in their ensemble mathematical deduction can draw consequences which represent with sufficient approximation the ensemble of experimental laws. The schematic representation, by mathematical symbols, of experimental laws is the purpose of physical theory. The hypotheses chosen and used are accordingly the result of a progressive evolution, and a repeated retouching is necessary. It may even be said that they are not chosen, but that they 'germinate' in the physicist because of his habits of thought in the traditions of the science.

The author closes the volume with a discussion as to the manner in which physics should be taught; he finds that in every exposition a compromise must be made between the exigencies of logic and the intellectual needs of the student.

In this review it has been impossible, because of the full and thorough-going presentation which the author makes, to do more than give an outline of his position with reference to the many phases of physical science. However, the volume contains a great deal which is both stimulating to reflection and demanding of discussion. Evidence of this is to be found, indeed, in the very lively discussions and appreciative reviews which it has excited in the French periodicals. The general position which M. Duhem takes seems to me to be of especial opportuneness and interest in connection with current agitation as to radical empiricism and pragmatism. To his view as to hypotheses, the 'standing' of qualities, the purpose of theory, and the means to attain this, the pragmatist might, perhaps, point with satisfaction at finding a position, sympathetic to his own, yet taken by an active physicist. But for M. Duhem this is methodological pragmatism. With the position which goes farther than this and finds in this pragmatism the implications of an ontological doctrine, one with whose outlines we have all been made familiar recently, doubtless much to their disappointment some of our pragmatists would not find him to be in agreement. Capable, indeed, of reasoning rigorously in the field of mathematical physics, he fails to disclose the discovery of any such implications. Is this omission, or does rigorous thinking desert him here?

EDWARD G. SPAULDING.

PRINCETON UNIVERSITY.

The Psychology of the Simple Arithmetical Processes: A Study of Certain Habits of Attention and Association. CHARLES E. BROWNE. *The American Journal of Psychology*, January, 1906. Pp. 1-37.

The study is provided with a full table of contents. The writer's careful summaries will be of use to readers, who will find the article worth their attention. Nine subjects served in the experiments, which were concerned with two types of procedure in arithmetical process: (1) purely mental from visual cues, (2) written and more complex.

It is found that a specific mental attitude corresponds to each of the four main processes, and this is further differentiated as multipliers or

divisors vary in size. This attitude is strengthened by the early steps of the problem.

A few of the results of the adding experiments may be mentioned. The tendency to motor expression is a prominent feature of this as of all the arithmetical processes, and increases with the difficulties met. Each step of the adding psychosis contains three phases: recognition of the result thus far, which becomes motorized; recognition of the digit to be added, visual; and a subconscious associative process. The tendencies to error include mental distraction, fatigue and mental vacuity, and false associations often due to the force of similarity, false substitutions either of method or of result. Another kind of error is the skipping or confusing of tens, as when one forgets whether the sum thus far is, say, 66 or 76, due to the lack of emphasis that the tens receive in motorization. Too fast or too slow a tempo decreases accuracy, the latter because it gives more chance for mind-wandering and strengthening of irrelevant associations. The feeling of accuracy is distinguished from the knowledge that one is right; the former is normally subconscious and seems to consist in the absence of the feeling of error. The adding of even numbers or any factorable series is relatively easy since the associative bond is strong in proportion as it involves primitive links like those of counting. Correlation with Ebbinghaus's memory tests is shown in the law that ease of combining is directly proportional to the difference between the two digits, or inversely to the size of the smaller. 'Counting is purely a verbal formula,' quite as arbitrary as a series of nonsense syllables.

Incipient motorization of results is a relic of one's early practise of counting and of addition tables, and is the root of the feeling of assurance. A similar fact holds of the other arithmetical processes. In many subjects a tendency was discovered for other aspects of the psychical process to run ahead of this motor fixation of the results, bringing danger of confusion or error. This indicates essential limits to the variation of different subjects in their mode of motorizing: in adding, lingual motorization is either gradual and prolonged or inhibited and sudden, the latter involving excess of strain alternating with recovery; in multiplying, if the problem is difficult, manual motorization is gradual, otherwise it follows as a 'detached and automatic part of the process.'

In multiplication, two types of difficulty are discovered: that of carrying and that of adding. According to the author, one cause of the former is as follows: In multiplication, visual are of little importance as compared with motor images. "Here there seems to be a clash of motor images. The motor ten of the foregoing product is to be added to the following motor product." But while in ordinary addition a motor and a visual image may coexist and be readily combined, two simultaneous motor images can not share the attention. This view has some plausibility, but it is possible that the author fails here to distinguish between images and sensations. If two visual or two auditory images can be noted together, there is nothing improbable in a similar coexist-

ence of two motor images. At this point the study also neglects the influence of practise in effecting difficult combinations. Therefore one may hesitate to accept the writer's first pedagogical corollary, *viz.*, to adopt 'the method of writing the entire products at each step' and concluding the process with addition, as a remedy for the above. His other corollaries seem well founded: the need of thorough mastery of the multiplication tables as an instrument and a standard, of simplifying the verbal formula employed therein to guard against fatigue through motorization, and of diminishing the size of the tables *en masse* by one half, because three 9's equal nine 3's.

Subtraction and division are found to be harder than addition and multiplication because of the reverse order of the associative bonds involved; the former are said to be 'far more immediate' than the latter, though 'far less practised,'¹ and to be marked by less confidence and by 'proving.' These relations account for the method of 'subtracting by adding,' which in practise, however, gives way to 'immediate association.'² The resulting digit is written automatically, perhaps from an unnoticed visual cue, and the act may be either explosive or gradual. Borrowing is attended with difficulties, such as the 'possibility of having to visualize a 4, say, with a perceived 5 directly in the field of vision.' The author gives a detailed analysis of the process, attended with diagrams showing the order of the attentive movement in different methods of subtracting. From this it is concluded that the method of increasing the subtrahend is superior to that of decreasing the minuend, because in the former there intervenes in the mental process, between the borrowing and the returning, a less number of focal points to be disturbed or, conversely, to disturb the memory of borrowing. Details can not be given further here, but the demonstration is excellent.

Purely mental division seems attended by more assurance than subtraction, so that 'verification tends to fall away.' The quotient is often reached by a process of multiplication. Errors commonly consist in substituting a wrong factorial divisor or in the functioning of a mechanical run-on association leading to counting or repeating a digit instead of dividing. Difficulty in dividing varies with the ratio in size between the divisor and partial dividend. The writing of the result tends to become an automatic process running parallel to the mental process. This automatic movement is more efficient when evenly sustained than when consisting in the sudden writing of a digit after the mental result is assured, for the latter makes a break in the mental process, and is more fatiguing.

The author organizes his facts well from the point of view of the topics indicated in the title of the article. He dwells on the interrelation of the four processes, and studies fully the usual types of error. With the prominence of the distinction between true and false, between valid

¹ P. 23. *Italics mine.*

² P. 30. The immediate is then decidedly the result of mediation and practise.

and invalid processes, his point of view is in part that of functional psychology. The idea of control under the dominance of mathematical purpose is plainly implied, but the study of purpose itself and of the logical significance of these processes as a whole or in their elements was beyond the scope of the article. It is not a far step, however, to the recognition of the conceptual value of the number images, whether motor, auditory or visual, and of the instrumental value, subsidiary to arithmetical thinking, of the more automatic processes. Even these simple arithmetical processes involve concepts and judgments, they are not mere mechanical associations. Every exercise in the experiments described was an attempt by the subject to solve a problem within this thought field. While the names of numbers may be arbitrary, even counting, when it is real counting and aroused by a genuine stimulus, is organic rather than mechanical. Its mechanization is only explained by the need of such a solid basis for the solution of more elaborate problems such as those of simple addition. Addition differs from counting in being a more highly organized activity having a selective control of habitual associative processes identical with or based upon those of counting. Thus such a psychological study as that reviewed is not far from a logical study whose aim is to point out the nature of erroneous processes, their conditions, and how to avoid them. The article expresses its affiliation with pedagogy, and this also shows the natural interlacing of the normative and the descriptive points of view.

E. L. NORTON.

UNIVERSITY OF ILLINOIS.

JOURNALS AND NEW BOOKS

ZEITSCHRIFT FÜR PSYCHOLOGIE UND PHYSIOLOGIE DER SINNESORGANE. March, 1906, Band 41, Heft 2 u. 3. Abteilung für Psychologie. *Untersuchungen über psychische Hemmung* (Schluss): G. HEYMANS. — In visual contrast with a constant relation between background and field the latter was reduced in brightness, which reduction was independent of the absolute light intensity; or, in the language of the inhibition theory, for intensive contrast as well as for suppression previously established, the coefficient of inhibition is constant. The results when the relation was varied to the point of suppression lead to the view that positive contrast, negative contrast and suppression are not different facts but merely exemplifications of varying degrees of inhibition. Theoretical observations on the distribution of mental energy follow. *Merkfähigkeit, Gedächtnis und Association* (Schluss): KURT GOLDSTEIN. — Experiments on memory in the feeble-minded. Results show that it is necessary to distinguish memory proper and capacity of observation. Impression (*Einprägung*) and capacity of associative observation common to both; memory proper depends more on the latter. Imbecility is characterized by lack of associative observation; acquired feeble-mindedness by lack of capacity for impression. In acquired feeble-

mindfulness retention may be relatively unimpaired, but the power of observation disturbed; in congenital feeble-mindedness the reverse. A third necessary condition to acquisition is apperceptive *Anlage*, the lack of which is the chief defect in congenital feeble-mindedness. *Wie rahmen wir unsere Bilder ein?*: MAX FOTH. — The nature of the frame of a picture is determined not so much by direct factors, such as dominant color-tones, complementary colors, etc., but rather by associative factors, such as come from indirect vision, actual environment of scene, etc. The color-tone as well as the degree of brightness of the frame should suggest the natural surroundings of the object depicted. Same principle holds for form and material. *Die Quarte als Zusammenklang*: RICHARD HOHENEMSER. — Analysis of the reasons for regarding the fourth as a consonant interval. *Literaturbericht*.

Abbot, Francis Ellingwood. *The Syllogistic Philosophy or Prolegomena to Science*. In two volumes. Boston: Little, Brown & Co. 1906. Pp. xii + 317; vi + 376. \$5 net.

Arnold, G. F. *Psychology Applied to Legal Evidence*. Calcutta: Thacker, Spink & Co.; London: W. Thacker & Co. 1906. Pp. ix + 470. 12s. net.

Deussen, Paul. *Outline of the Vedanta*. Outline of the Vedanta system of philosophy according to Shankara. Translated by J. H. Woods and C. B. Runkle. New York: The Grafton Press. 1906. Pp. vi + 45. \$1.50 net.

Ormond, Alexander Thomas. *Concepts of Philosophy*. New York and London: The Macmillan Co. 1906. Pp. xxxi + 722.

Williams, Henry Smith, assisted by Edward H. Williams. *A History of Science*. In five volumes. Vol. I.: The Beginnings of Science; Vol. II.: The Beginnings of Modern Science; Vol. III.: Modern Development of the Physical Sciences; Vol. IV.: Modern Development of the Chemical and Biological Sciences; Vol. V.: Aspects of Recent Science. New York and London: Harper & Bros. 1906. Pp. vii + 309; ix + 308; ix + 308; ix + 306; ix + 300.

NOTES AND NEWS

THE *Minnesota Alumni Weekly* of October 8 makes the following announcement: "Increased interest and membership in the department of philosophy and psychology have resulted in the organization of the Philosophical Club, the purpose of which is to promote the discussion of broader aspects of science and life. Membership is open to all faculty members interested in philosophy and to all past or present students of the department, the only formality being acceptance by the executive committee of the club. During the year the club will present a series of public lectures in which representatives of various sciences will discuss

some of the first principles or final conclusions of their work as data for philosophic study, the aim being in this way to obtain insight into unity and organization of knowledge. During the first semester the lectures will be ethical in character under the general heading of Science and Life. The program so far as arranged is as follows: 'The Ethical Basis of Law,' Dean Pattee, October 19; 'Literature and Life,' Dr. Burton, November 2; 'Biology and Life,' Dr. Sigerfoos, November 9; 'Economics and Life,' Dr. McVey, November 16; 'Religion and Life,' _____, November 23; 'Philosophy and Life,' Mr. Swenson, December 7. The lectures will be open to all interested and will be given in the Library, room 18, at four o'clock. Besides these public lectures the club will have a smaller reading circle composed of selected students and devoted to the discussion of current philosophy."

THE discussion in England of classical education brings out occasionally observations worth repeating. The following is from *Nature* for September 20: "Speaking at Hawarden on Monday on the objects and advantages of education, Mr. Wyndham remarked that 'it was right to include science in the curriculum because we are now living in an age of science. In the sixteenth century people lived in an age of literature, and the minds of men were attracted toward the old books written in Greek and Latin.' This difference between the needs of the two ages was pointed out by Sir Norman Lockyer in an address at the Borough Polytechnic Institute last December, printed in *Nature* of March 29, as the following extract from the address clearly shows: 'We must arrange our education in some way in relation to the crying needs of the time. The least little dip into the history of the old universities will prick the bubble of classical education as it is presented to us to-day. Latin was not learned because it had the most magnificent grammar of known languages. Greek was not learned in consequence of the transcendental sublimity of ancient Greek civilization. Both these things were learned because people had to learn them to get their daily bread, either as theologians or doctors or lawyers, and while they learned them the "nature of things" was not forgotten. Now what is the problem of to-day? We are in a world which has been entirely changed by the advent of modern science, modern nations and modern industries, and it is therefore perfectly obvious that if we wish to do the best for our education it must be in some relation to those three great changes which have come on the world since the old days.'"

THE *Century* for September contains an article by Dr. R. B. Bean entitled 'The Negro Brain.' Dr. Bean does not believe that the negro and the white man are brothers. He sums up as follows: "The white and the black races are antipodal in cardinal points. The one has a large frontal region of the brain, the other a larger region behind; the one is a great reasoner, the other preeminently emotional; the one dominating, but having great self-control, the other meek and submissive, but violent and lacking self-control when the passions are aroused; the one a very advanced race, the other a very backward one. The Caucasian and the negro are fundamentally opposite extremes in evolution."

THE following is taken from a communication to *Science* for October 5: "Dr. S. Auerbach has published an interesting contribution to the cerebral localization of the musical talent in a description of the surface morphology of the brain of Professor Naret Koning, late director of the opera in Frankfurt a. M. The report includes a comparative study of the brain of the celebrated composer Hans v. Bülow, for some time in the possession of Professor Edinger, and of brains of other eminent men, of known musical talent, previously described. The author finds in the considerable breadth and configuration of the (supra) marginal gyre, as well as the adjacent portion of the supertemporal gyre, an expression of the greater aptitude for the multitudinous associations in the auditory sphere which distinguished these persons from others less musical. The author goes on to show that the corresponding portions of the skull usually indicate this redundancy."

THE Open Court Publishing Company has just issued, as one of its series of *Philosophical Classics*, Fichte's 'Vocation of Man,' in William Smith's translation, edited with introduction by Dr. E. Ritchie. Two other books of the same series are reissued with additions. To the edition of Locke's 'Essay' (Books II. and IV. with omissions) is prefixed a reprint of the rare English translation of Leclerc's 'Eloge'—the inimitable little memoir on which most of the later biographies are based. The edition of Hume's 'Enquiry concerning Human Understanding' is supplemented by selected chapters of the 'Treatise' setting forth Hume's doctrine of substance, barely touched on in the 'Enquiry,' and amplifying the teaching of the 'Enquiry' about causality.

CHAS. HUGHES JOHNSTON, Ph.D. (Harvard), last year professor of psychology at East Stroudsburg State Normal School, is now instructor in philosophy and psychology at Dartmouth College. Some psychological apparatus is being secured for the college, which, it is hoped, may form the nucleus for a psychological laboratory in the near future.

THE guests of the University of Aberdeen at its recently celebrated four hundredth anniversary included Professors H. Höffding, Hugo Münsterberg, Lombroso and W. Ostwald.

THE publishing house of Fischer Unwin announces a volume entitled 'Thomas Davidson, the Wandering Scholar,' by Professor William Knight. Numerous friends and pupils contribute their estimates and impressions.

DUTTON AND COMPANY have the sole publishing rights in this country of Guenther's 'Darwinism and the Problems of Life.' The book is published in London by A. Owen and Company.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

THE KNOWLEDGE OF PAST EVENTS¹

THE problem of the relation between knowledge and its object is nowhere more sharply defined than in the knowledge of time. It is clear that there are many known entities which contain temporal properties different from those of the knowledge itself. Thus I may know the events of yesterday, and yet know them to-day. In this case we find two events, which can not be wholly identified because their times are different, but which are nevertheless related as object and state of knowledge. The knowledge of future events presents a similar situation. Furthermore, in knowledge both of the past and of the future, it is possible for the object and the state of knowledge to differ in duration. Thus the dying man is said to review in an instant the events of a lifetime. In the case of knowledge of the present, we meet with the familiar difficulty concerning the knowledge of succession. It appears that while the object known contains the temporal relations *before* and *after*, the knowledge itself contains only the simple temporal property of occurring *now*. Finally, there

¹ I have thought it best in the present discussion to avoid the detailed consideration of classical discussions of this general problem, in the hope that I may thereby make my analysis more simple and direct. Among contemporary discussions of this problem I find myself most in sympathy with that of Professor Fullerton, contained in Chapter XIII. of his 'System of Metaphysics.' But his treatment of the matter is, after all, disappointing, because, in spite of a certain flourish of radicalism, he is too cautious and guarded to be clear-cut. I find his criticisms of traditional views on the whole effective, but his own independent doctrine obscure through his willingness to stake so much upon such distinctions as 'real' and 'apparent,' and 'thought' and 'intuition.' Certain crucial statements, furthermore, I find quite unintelligible. He says, for example, that 'the past and the future are non-existent, *from the point of view of the present*' (pp. 206, 207). If he had said that the past and future are non-existent *at the present*, I should have understood him. But it seems clear to me that *from the point of view of the present* we know past events to be existent in the past, and future events in the future. With the view set forth by Professor Taylor in Book III., Chapter IV., of his 'Elements of Metaphysics' I find myself almost wholly in disagreement. It consists essentially in what appears to me to be an obscure and inaccurate distinction between perceptual and conceptual time.

are many known entities which are explicitly non-temporal, but which are nevertheless known at specific times. Here, as above, knowledge and its object appear to be different, if not incompatible; while, on the other hand, it seems necessary to affirm that if knowledge be knowledge at all it must contain the truth concerning its object. In the present paper, and in the further studies which are to follow, I shall attempt an empirical examination of the cases of knowledge which I have just enumerated, all of them having a special reference to time. I shall assume that writer and reader may view them together and hope to arrive at a mutually intelligible description of them. To this end it is necessary, in the first place, to examine experience with as little preconception and with as much patience and diligence as possible; and, in the second place, to use whatever terms may be employed for description in an entirely unambiguous sense. To realize the second of these aims it will be necessary to introduce new terms, whose connotation is given them by the distinctions explicitly made in the course of the discussion. It is impossible to avoid more fundamental epistemological and metaphysical problems, and there are two such problems to which, indirectly, I shall give a definite solution. In the first place, I hold it to be true that knowledge *contains* the things known, that all knowledge is in the last resort *direct apprehension*. In the second place, I hold that it is impossible to understand temporal experience without supposing time to be an order intelligible *in abstracto*, possessing certain properties in its own right, and supplying these properties to the complex entities which we call events. So far as I know, Mr. Russell's argument against the derivation of time from non-temporal quantities or their relations is irrefutable. It will clear the air if I quote from this writer's summary of the theory which I here hold in common with him:

"In the absolute theory (of space and time) we have two classes of entities, (1) those which *are* positions, (2) those which *have* positions. Any two terms of the first class have an asymmetrical transitive relation:² in the present case, either *before* or *after*. The terms which have positions are terms each of which has, to one or more of the terms which are positions, a certain specific relation, which may be expressed by saying that the new terms are *at* the positions, or that they occupy the positions. By compounding a term which has one or more positions with one of the positions which it has, we obtain

² I shall employ Mr. Russell's classification of relations, as follows: "Relations such that xRy always implies yRx are called *symmetrical*; relations such that xRy , yRz together always imply xRz are called *transitive*. Relations which do not possess the first property I shall call *not symmetrical*; relations which do possess the opposite property, i. e., for which xRy always excludes yRx , I shall call *asymmetrical*." ('Principles of Mathematics,' p. 218.)

a complex term, i. e., the said term at the position; this new complex term contains the position as a constituent, but contains only one such position. In the case of time two such terms which contain the same moment as constituent are said to be simultaneous; two which contain different moments are said to be the one before and the one after, by correlation with the moments they contain, but this new relation is complex, containing as a constituent the before and after of moments. We may call *qualities* the terms which have positions in time; thus a quality may be at many moments, or even at all moments. The compound formed of a quality at a time may be called an *event*; thus an event is logically incapable of recurrence."³

I shall not only assume the truth of this theory, but shall use various terms such as *event*, *quality*, *position*, etc., in the sense which Mr. Russell here gives to them. At the same time I am not primarily concerned either with this theory, or with the epistemological theory stated above. I do not aim to prove them, but only to give them such verification as follows from their successful application in the case of certain difficulties connected with the temporal reference of knowledge.

In the present paper, while I shall bring forward terms and conceptions which I believe to be more generally applicable, I shall confine myself to a study of *the knowledge of past events*. There is certainly no more familiar experience. Past events are constantly referred to in discourse and action, and are as surely common objects as the coin which is passed from hand to hand. To relegate the object to any limbo of unreality or relativity would be as prejudicial to the most elementary beliefs in the one case as in the other. It is entirely clear, furthermore, that the unique temporal value assigned to remembered events is essential to them. The past time at which the event occurred and the specific quality of the event together constitute the entity referred to. On the other hand it is clear that we in some sense remember or refer to this event, *now*. There appears to be a difficulty, then, in that an event, containing one particular time as an essential and inalienable part of itself, seems also to occur at another and contradictory time.

There is one ambiguity which quite unnecessarily obscures this situation. *Does* the past event exist? In the case of such a question a palpable verbal ambiguity attaches to the use of the grammatical present tense. The present tense has two quite different uses: (1) affirmation or judgment in general; (2) affirmation of present existence or occurrence. This ambiguity can readily be obviated by a more careful use of terms. In exact thinking like that of mathe-

³ B. Russell, 'Is Position in Time and Space Absolute or Relative?' *Mind*, N. S., Vol. X., p. 294.

matics, this is provided for by the use of such symbols as: $=$, $>$, $<$. In the case of such propositions as $4 > 3$, there is no reference whatever to time. It follows that these propositions are as true at one time as at another. But this holds equally well of propositions which affirm or deny temporal existence. Such propositions may be true of one and only one time, but when so formulated they are true *at all times*. Propositions concerning temporal existence may thus assume either the one or the other of two forms: a form expressing the timeless truth of the proposition, or a form expressing the temporal relation between the time of the existence and the time of knowledge. Let us suppose At^5 to represent an event having the quality A , and occurring at the time t^5 .⁴ This may be expressed in propositions of the second, or temporal type, as follows: at t^3 (earlier than t^5), A will occur at t^5 ; at t^5 , A is occurring; at t^7 (later than t^5), A occurred at t^5 . The same fact may be expressed in a proposition of the second type as follows: *the time of At^5 is t^5* , or *At^5 exists*; where the present tense of the verb is used to express not a temporal relation but a simple affirmation, which so far as its truth is concerned may be made as well one time as another. There is then no logical difficulty in supposing that a past event, including its time, is true now. But the possibility of its being *known* now is an entirely different matter. If it is to be known now, and known directly, it would seem necessary to suppose that it exists now. Present knowledge of a past event seems, in other words, to involve two contradictory temporal judgments of the type just defined: *the event existed then, the event exists now*.

It is clear that we must discover some sense in which an event which takes place at one time may without prejudice to its proper historical position belong to a manifold called a state of knowledge which as a whole is dated at another time. A pertinent suggestion is conveyed by certain terms employed by common sense. Memory is commonly termed *retrospect*, i. e., looking backward, and knowledge of the future *prospect*, i. e., looking forward. Common sense assumes, furthermore, that without forfeiting its identity an event may be known, first, prospectively; then at the time of its occurrence; and finally, retrospectively. In order to understand that this is possible, it is necessary to observe the general and important fact that every individual complex entity may acquire a variety of aspects or modalities through which it may be counted an indefinitely great number of times. In the first place, every complex entity possesses the

⁴ t^1 , t^2 , etc., here symbolize different periods of time, i. e., stretches of time having a particular position, and which for the sake of simplicity we may suppose to have no instants in common.

potentiality of what we may call *direction-aspects*.⁵ This follows from the general fact that the constituent terms of a complex entity must be related, and from the further fact that every relation contains a difference of direction or sense. Either of the terms x and y , which we may suppose to stand in the symmetrical relation R , may be regarded as so related to the other; so that we have the two propositions, xRy and yRx . In the first case, R refers to x and relates to y ; while in the second case R refers to y and relates to x . Or, to employ Mr. Russell's terminology, in the first proposition x is the *referent* and y the *relatum*; while in the second, y is the referent and x the relatum.⁶ If we suppose our entity to be a manifold without order, as in the case of a pair of spatial objects in contact, we can distinguish *a is in contact with b* from *b is in contact with a*. Although the relations are in this case the same, the two directions are nevertheless distinguishable and essential to the whole entity. If, on the other hand, the complex entity is an order, the relations are asymmetrical, and it must be possible to distinguish two different relations, a generating relation R and a converse relation \bar{R} .⁷ In the case of the alphabet it is equally true that B follows A , and that A precedes B . In short, every complex entity contains direction, sense or converse in the relations which connect its constituent parts. But it must now be noted that while such an entity contains both directions of every relation that enters into it, it does so quite impartially, and provides no ground for the isolation of either. When owing to some external determination such isolation does take place, as, *e. g.*, in the judgment, *B follows A, C follows B*, etc., there occurs what I have called a *direction-aspect*. Let us now return to the case of the event, or complex entity including particular instants of time. Time is an order, and is generated, therefore, by an asymmetrical relation. It follows that the instants in any stretch of time stand in the forward or generating relation *later than*, and also in the converse relation *earlier than*. If it be true that t^2 is later than t^1 , it is no less true that t^1 is earlier than t^2 . Through the modality of direction thus provided for, any event may, so far as it is itself concerned, be known either forward, in the order of occurrence, or backward, in the order of retrospect.

But, in the second place, every complex entity contains parts, and these in their severalty and fragmentariness constitute what we shall call *part-aspects* of that entity. Every whole includes all of its

⁵ I use the term 'direction' to apply to all relations, whether spatial or not. I should have preferred the more exact term 'sense,' had it not been for the danger of confusing it with 'sensation.'

⁶ The reader who wishes to look up this point may consult Russell's 'Principles of Mathematics,' p. 95.

⁷ See p. 618, note 2. Cf. also Russell's 'Principles of Mathematics,' p. 94.

parts; while it permits, without itself determining, the isolation of one of them, or the segregation of a group of them. Thus *ABC* and *ADG* as parts of the alphabet are contained therein. But that *ABC* and *ADG* should sometime, somewhere, somehow, stand alone, is accidental to, while entirely consistent with, the nature of the alphabet as a whole. Similarly, any continuous period, or any scattering fragments of the temporal process, may be abstracted and isolated. The event At^1 , or the pair of propositions, At^1 is earlier than Bt^5 and Bt^5 is later than At^1 , would constitute part-aspects of temporal existence. It follows that the single proposition, At^1 is earlier than Bt^5 , is a complex aspect, since it is an isolated part of the order of temporal existence taken in only one of the two directions of the temporal relation.

But there is a third type of aspect. It is clear that any entity may stand in an external relation with any other entity, and that such a relation can never be deduced from either of the terms so related. Thus the color blue may be externally related to the alphabet, or to the idea of goodness, while remaining both indifferent and uncompromised. Similarly the event At^1 may be externally related to any non-temporal entity such as *M*. $(At^1) (M)$, where the terms in parentheses are so related, would represent what we shall call a *context-aspect* of At^1 . It follows that when a part of any entity stands in an external relation to the whole or a part of another entity, there results a complex part and context aspect.

Before proceeding to employ these aspects in a description of knowledge of the past, it is important to observe once more that they do not in any way contradict the event, or destroy its identity, since the event clearly permits them. Nor are they duplications of the entity since they are distinguished as, and must therefore be judged to be, senses, contexts or parts of the one identical entity. The aspect is identical with its entity so far as it includes that entity or anything essential to it. The entity, on the other hand, includes every property of its aspect save its incompleteness and its external context.

Let us now return to our problem. So far as I can ascertain from an empirical examination of the matter, it is always possible to find in any typical case of knowledge of the past three terms and two relations, as follows: (1) an event referred to, containing its time of occurrence; (2) the present time, as part of some present event, such as a bodily state; (3) some further context; (4) the external relation, *known with*, subsisting transitively between the above terms in the above order; (5) the relation, *earlier than*, referring to (1) and relating to (2). Two points in this analysis seem to call for special comment. First, must such a state of knowledge

necessarily include the present time? The answer to this question lies in the term *past*, which, if it has any meaning at all, must signify the converse or negative temporal relation. However inaccurately the event may be located in the past, if it is to be regarded as past at all at least enough terms must be known to establish this specific relation. Now it is clear that the two terms essential to this relation are the time of the event known as past, and *the present time to which it stands in the relation of being past*; while any or all of the intermediate terms may be lacking. The past event may, of course, be known to be such only through being earlier than some other time than the present; but only when this other time is itself known in relation to the present. Knowledge of the past as past, however vaguely or indirectly it may be located, must include the present. Secondly, doubt may be raised as to the virtue of the third constituent enumerated above. It is mainly through this further context that it is possible to distinguish one individual's knowledge from another's, when the times present and the times past are the same. It is not necessary to suppose that any given state of knowledge is peculiar to one individual, for it may be a common experience in which two or more selves intersect. In such a case the identification of the individual knower is possible only through a relation between the given state and further outlying context. As a matter of fact, however, a total state of knowledge is commonly, if not always, internally unique. And this is due in part to the specific fragmentariness with which the object is known, but in larger part to the immediate presence of nuclear or ideal elements of some individual self. For this reason we have included among the constituents of a typical case both a part of the past event and also a further context having no special temporal connotation, but standing to the residue in the relation *known with*. We may, then, briefly formulate knowledge of a past event as follows: $(at^{-s})(bt^0)(m)$. The terms inclosed within parentheses stand in the relation *known with*, the direction of the relation being indicated by their order. Thus the relation refers to at^{-s} and relates to bt^0 and m ; or refers to at^{-s} and bt^0 , and relates to m . t^0 symbolizes a time known as present, and t^{-s} a time related to it as past. a and b symbolize parts of A and B , which are the qualities of events At^{-s} and Bt^0 . Finally, m signifies a context made up of elements peculiar to the experience of the individual M .

We are now prepared to face our main problem. How is a manifold thus constituted to be dated? What is the propriety of reading the above formula as, *the knowledge of At^{-s} at t^0* ? In the first place it is entirely clear that At^{-s} can not be said to occur at t^0 , because of the fact that it contains t^{-s} . The fundamental principles of order,

to which time must be held to conform, assign to each term an unambiguous position.⁸ t^s , if indeed it can be said to occur at all, can occur only at t^s , and t^0 at t^0 . It must be held, then, that an event can occur at the time when it is known, only in case it is known when it occurs, i. e., when it is a present event. Supposing t^0 to represent a time known as present, then Xt^0 represents the only class of events that can occur when they are known.⁹ A past event, therefore, must never be said to occur at the present when it is known. *Distributively* the events contained within any state of knowledge must be referred to their own proper times. On the other hand, unless our empirical analysis is at fault, this manifold *as a whole* is, in all judgments concerning the time of a knowing of the past, actually correlated with t^0 . The reason for this will appear, I believe, if we recall the peculiar part which is played by t^0 . t^0 , or bt^0 , it will be remembered, is the term *to which* at^s as a past event is related. While at^s is the *topic* of knowledge, bt^0 , or $(bt^0)(m)$, is the specific qualification to which at^s is here submitted. In other words, $(at^s)(bt^0)(m)$ may be said to be the $(bt^0)(m)$ aspect of at^s . *As aspect*, then, this manifold should be classified through $(bt^0)(m)$, rather than through at^s , and thus temporally correlated through t^0 , the constituent time of $(bt^0)(m)$. We have here to do with a familiar, but very obscure conception, that of *point of view*. This phrase properly signifies nothing more nor less than a relatum together with one or more referents, or a term with one or more other terms *related to it*. In the case where there are more referents than one, the relations are convergent in sense. Thus we may suppose a , b , c and d to be related to m ; the propositions, aRm , bRm , etc., then converge to m , which may be said to be the center of the system. Now it seems to be generally agreed that a point of view is to be classified as such through its center, and specified through its perimeter. Thus the system above would be designated as *point of view m , respecting a , b , c and d* . Or, any such system may be formulated as a set of terms having a common relatum; as *a , b , c and d from the point of view m* . Let us now construe knowledge of the past as a special case of point of view. It is then either present knowledge, modified through being of a past event, or a past event modified through being known now. In other words, the manifold $(at^s)(bt^0)(m)$ is both the event at^s from the point of view $(bt^0)(m)$, and the point of view $(bt^0)(m)$ respecting at^s . As a case of knowledge, or point of view, then $(at^s)(bt^0)(m)$ is to be classified through $(bt^0)(m)$ and its constituent time t^0 ; while it is to be further specified through at^s .

⁸ Cf. B. Russell, 'On the Notion of Order,' *Mind*, N. S., Vol. X, p. 33.

⁹ The special question of present knowledge will be considered in a later paper.

If this analysis is accepted, then $(at^{-5})(bt^0)(m)$ must through t^0 also find its place in the temporal succession of the individual's inner life. Without claiming that every phase of an individual experience can be internally dated, we may, I believe, safely affirm that its course as a whole is coordinated with the history of nature and society through the times known as present. Thus if I had experience of the year 1894, and if there is internal proof of it, I must have experienced as *now* the time which in the true temporal order is designated as 1894. Indeed, it is impossible that the terms *present time* and *now* should mean anything else.¹⁰ Every state of individual M which includes its own time will then have the form $(bt^0)(m)$, and every case of knowledge of the past can be assigned a place in the order of these states only through containing such a term. To conclude, the formula $(at^{-5})(bt^0)(m)$ may be read as an aspect of At^{-5} , namely, At^{-5} more or less completely known at t^0 , by M ; or as an instance of M 's knowledge, namely, M 's knowledge at a present time of the event At^{-5} .

There is one further question which, though very general in its bearings, can not well be avoided here. It is commonly said that all knowledge of the past (except, perhaps, of the immediate past) is conceptual rather than perceptual. I am not at all concerned here to distinguish these much-abused terms, but only to object to a supposition which commonly accompanies this application of them. It is commonly supposed that the past, because it is known conceptually, is known indirectly, or by substitution. Now from what has been said above it follows that in a certain sense a past event is represented in present knowledge of it, since it is not the absolute event, but an aspect of it, which appears therein. But this does not mean, and should never be taken to mean, that anything other than the event is substituted for it. That which represents the event is the event, wholly or in part, and together with something else. Since the term representation seems to imply substitution, it is better to avoid it altogether, and to say simply that the event or part of it is a constituent of the manifold of cognition.¹¹ This enables us properly to understand substitution when it is actually made for

¹⁰ That the external dating which may be obtained through a study of the physiological conditions of individual experience must correspond exactly with this internal dating, is, of course, assumed in the very method of study employed in determining these conditions.

¹¹ There is a somewhat more difficult case which we must reserve for subsequent consideration. We may suppose an event which actually occurs at t^{-5} to be known at t^0 , but only as respects its quality. Thus it may happen that of event At^{-5} only A is known at t^0 . But since At^{-5} as known at t^0 , i. e., $(a)(bt^0)$, contains no temporal location except the present time of the knowledge, it is more convenient to regard this as a special case of temporal knowledge of non-temporal entities; and as such it constitutes a separate problem.

purposes of formulation, calculation or record. To my mind it is an incontestable truth that such substitution is possible only when based upon and attested by direct knowledge. Thus I may in a book employ the sentence, 'Columbus discovered America,' in place of the event itself; and this printed symbol as a visible entity may occupy a time quite other than that of the event for which it is substituted. But there would be neither sense nor use in this substitution did I not distinguish the symbol and what I mean by it as two different entities. The symbolic representation of the past involves, then, a knowledge of the past which is represented, and can not itself afford us any solution of the problem as to how in the last resort that past itself is known. To this question I can see but one answer, to the effect that it is known directly through itself constituting a part of the manifold which we call knowledge. Let me add only that while knowledge of the past of the type which we have been considering obviously exceeds sensation, the analysis and description of auxiliary factors of knowledge such as *conception*, *memory*, *imagination*, etc., lie outside the scope of the present inquiry. For present purposes we may regard them all as embraced within *cognitive experience*.

RALPH BARTON PERRY.

HARVARD UNIVERSITY.

SHOULD WE STILL RETAIN THE EXPRESSION 'UNCONSCIOUS CEREBRATION' TO DESIGNATE CERTAIN PROCESSES CONNECTED WITH MENTAL LIFE?

THE expression 'unconscious cerebration' is one rarely seen in contemporary literature. It is hardly to be found in the indices to treatises on psychology, and even Baldwin's 'Dictionary' fails to assign it a separate caption. Is it that the expression is no longer needed? Are the facts for which the term was originally devised now met by a more adequate and up-to-date terminology? Or may the expression still be rescued from a threatened annihilation and be made to cover a situation for which no more appropriate term exists?

There can be no doubt that the decline in popularity of explanations in terms of unconscious cerebration is due in great measure to the wide-spread use of the 'subconscious' as an explanatory principle. This 'subconscious,' with its included meanings of 'split-off' or of 'subliminal' consciousness, has seemed to many to do a masterly service in clearing up the facts which Carpenter and his followers attributed to unconscious cerebration. This, I take it, is the chief

reason why the latter expression has been pushed to the wall. Added to this, however, is probably a second reason, namely, that the connotation given to the term by its leading advocates was such as to make it cover a rather miscellaneous assortment of facts found later to be by no means reducible to a uniform principle.

Those of us who find ourselves unable to accept that doctrine of subconsciousness which makes of it a detached, split-off companion of our normal consciousness are the ones, naturally, who feel an interest in discussing the status of unconscious cerebration. To those who are firmly intrenched in their adherence to the subliminal the present discussion will appear to have slight significance. To the rest of us, however, it seems to me that such a discussion should be most opportune, in view particularly of the fact that that phase of the subconscious which we accept as legitimate has recently been exploited with such clearness and masterly thoroughness in Jastrow's 'The Subconscious.' If this 'legitimate' subconsciousness is able to displace satisfactorily the somewhat clumsy term 'unconscious cerebration,' we wish to have the fact clearly recognized. While if, on the other hand, 'unconscious cerebration' may refer to facts and processes not included under subconscious phenomena, that fact also should be made plain.

I

Perhaps we may best approach our special topic by attempting to mark off certain diversities of cerebration from the point of view of the consciousness which runs parallel to them. Thus we may get the proper contrasts to illuminate our particular problem. Letting the term 'cerebration' stand for those cerebral processes which directly subserve our present or our future consciousness, we may distinguish the following varieties of it.

1. *Fully Conscious Cerebration.* a. *Prescribed Cerebration.*—Here the conscious processes are such as are awaited, or expected. We deliberately set out to get something into consciousness. We forecast the coming material in so far as we already consciously possess those processes which are associatively effective in arousing it. The results of such cerebration may be of two sorts: (1) The consciousness may be *definite* and *satisfactory*. Thus if we deliberately start to recall a line of poetry, we experience the unrolling of the line in ready and perfect fashion, and we find the event satisfactory if subsequently we chance to reflect upon it. (2) The consciousness may be *relatively indefinite and more or less satisfactory*. This is illustrated by what happens when, for example, we search for fine phrases in which to clothe our thoughts, or for characterizations of persons or situations. Here, in the nature of the case, the cerebration is somewhat loosely prescribed, and what arrives in con-

consciousness may be warmly approved or accepted only as a temporary makeshift for something conceivably better.

b. *Unsolicited Cerebration*.—This is cerebration the conscious side of which is in no sense forecast. The situation is wholly non-voluntary. Processes arrive, but they were not summoned. Under this head should be placed all that array of processes which we commonly describe by saying that they 'simply occurred to us.' Here again the results for consciousness may be of two sorts. (1) The conscious processes may be *inconsequent*, perhaps *incoherent*. Such, for the most part, are dreams and hypnagogic images. Such also are many trains of waking fancy. (2) Consciousness may be *entirely coherent, effective and to the point*. Whatever arrives in the field of consciousness is unbidden, but when scrutinized it is given the mark of approval. The arrivals may be strangers representing all grades of distinction, or they may be old friends returning to surprise us. Such arrivals are the spontaneously created poems, the apt phrases, the solutions and the like, whether coming in the waking or in the dreaming state. Such in large part are musical improvisations and inspirational speakings and writings. Such are the coherent trains of reverie or of delirium, which bring our past experiences again before us.

2. *Vaguely Conscious Cerebration*.—The marginal consciousness is the accompaniment of this. Here, therefore, should be placed whatever belongs to our subconscious experience.

II

Our problem may now be readily stated. It is simply this: Are there any varieties of cerebration other than those indicated above? Is there, that is, any cerebration which, while directly significant for consciousness, is not at the moment paralleled by a concomitant consciousness? If such cerebration exists, it should have the right to be called unconscious. Now it is not my purpose to undertake any detailed account of how the process of cerebration is to be figured. Such an attempt would be premature and without special point in this connection. But taking unconscious cerebration to mean *cerebration significant for later consciousness but unaccompanied by present consciousness*, must we not admit that just such cerebral activities must be presupposed for the understanding of some of the obvious facts of mental life? Such facts, testified to with notorious universality, have been appealed to unanimously by the advocates of unconscious cerebration, and they need only be recalled here to receive at once the admission of their indisputable character. Our experience confirms them daily. We all know that a momentarily forgotten word does often appear spontaneously in consciousness.

We know that there is something indisputable about the facts of so-called 'mental incubation.' We know what a day's outing or an evening's relaxation will do for our mental productivity. We do often find that what were baffling problems and annoying perplexities when we dropped them from mind are much straightened out and set in order when next these same matters come to consciousness. And we know that in unusual cases automatic writing and similar movements occur in (seemingly) entire unconsciousness both of their initiation and of their execution. These, I believe, are the types of fact that need the hypothesis of unconscious cerebration for their explanation.¹

Now, of course, many of these phenomena just indicated are conditioned primarily by neural recuperations, by the increase, that is, of those cerebral tensions, due to nutritive changes, which are the prerequisites of all consciousness. And the establishment of such tensions is assuredly an unconscious process. But the term 'unconscious cerebration' should be applied, it seems to me, not to mere accumulations of cerebral energy due to nutritive processes, but rather to cerebral *activities* of one sort and another. If, in default of actual knowledge on the subject, we try to hint at what such activities may be, we may not be far wrong in speaking of them—illustratively at least—as redistributions of cerebral tensions, or as the settling down of certain patterns of connections which later form the substrata of novel forms of consciousness. Or, otherwise expressed, we may speak of the disappearance or of the rearrangement of inhibitions, consequent presumably upon the makings and breakings of neurone contacts. It is just this sort of cerebral change that seems to take place in the interval between the vain search for a word and its subsequent sauntering into consciousness. It is just this that seems to have taken place when the visions of the early morning are found clearer than those of the night before, or when, in general, a genuine period of incubation has been lived through. Fresh and abundant accumulations of cerebral energy are, to be sure, essential for the best results along the lines mentioned, but mere anabolic processes as such are not in any way to be regarded as processes of cerebration. Unconscious cerebration in its true sense is the silent adjusting of the cerebral machinery for the subsequent turning out of a conscious product. And whenever we are warranted in believing that such silent adjustments have taken place, there we are justified in appealing to unconscious cerebration.

¹ For a further type of fact, occurring less frequently than those mentioned, cf. Pierce, 'An Experience and an Inquiry,' this JOURNAL, Vol. I., 1904, p. 400.

III

The formulation just given is simple enough in principle, however difficult its application may be in a concrete case. And it enables us at once to exclude certain phenomena which the advocates of unconscious cerebration have commonly appealed to. In the first place we must take care not to label as unconscious that cerebration which is presumably accompanied by low-grade, marginal consciousness. Such cerebration is probably, and many times certainly, the accompaniment of those automatic activities commonly represented by walking and piano-playing. Carpenter, who together with his immediate followers appealed to these mechanical activities of the body as evidence for his theory, was not supplied with the present-day analyses which would have enabled him to separate clearly the unconscious from the subconscious. In the second place we must carefully exclude whatever may be attributed to unconscious cerebration through the uncritical use of the word 'unconscious' in its secondary and popular meaning of 'involuntary' or 'unintentional.' It is through this mistaken use of the term that the followers of Carpenter, less critical in this respect than he, have appealed to the phenomena of dreams as furnishing contributory evidence for the reality of unconscious cerebration.² But the cerebration of our dreams is no more unconscious, in the true meaning of that word, than the cerebration of waking life. It is rather to be classed with the variety described above as 'unsolicited.' Nor are hallucinatory voices, as Miss Cobbe would have it, cases of unconscious cerebration. Whatever cerebration is then taking place has a quite vivid conscious concomitant.

In a word, the meaning that should be given to 'unconscious,' in this as in all connections, discriminates it effectually from the 'subconscious' on the one hand and from the 'unintentional' on the other. And whenever we have evidence that cerebral activities have been going on absolutely unaccompanied by corresponding consciousness, though essential for the conscious processes that are to emerge later, there we may say that unconscious cerebration has been taking place. And as a designation for such activities and as an explanation for indubitable facts of experience not otherwise to be comprehended, the expression 'unconscious cerebration' seems to perform a service valuable enough to warrant its resuscitation and to insure its continued and dignified survival.

A. H. PIERCE.

SMITH COLLEGE.

² Cf. Cobbe, *Macmillan's Magazine*, XXIII., 1870, pp. 24 and 512; Childs, *American Journal of Psychology*, V., 1892, p. 249; Dugas, *Revue Philosophique*, XLIII., 1897, p. 412.

REVIEWS AND ABSTRACTS OF LITERATURE

Studies in Philosophy and Psychology. A Commemorative Volume by Former Students of Charles Edward Garman. Boston and New York: Houghton, Mifflin & Co. 1906. Pp. xxiv + 411.

STUDIES IN PHILOSOPHY

"By their fruits ye shall know them." This volume is the second recent and notable commemorative presentation of 'fruits' by former students to American teachers of philosophy. Professor Garman, like Professor Howison, belongs to that select circle of philosophers who take the teaching of philosophy seriously and who succeed, therefore, in getting students to take philosophy seriously. If, now and then, Professor Garman has been visited with regret that since he found 'that his students would be satisfied with nothing less' than his best and his entire energy in teaching, he dared not 'let down his course and devote himself to publishing,' he must find much in this volume to vindicate his course.

Professor Garman's letter on the purpose and method of teaching philosophy, which forms the excellent preface of the volume, was originally published in the *American Journal of Psychology*, in 1898, and is, therefore, familiar to many. Of this letter it is necessary to say only that it is not difficult for the reader to understand how Professor Garman has succeeded so well in inoculating his students with philosophy and in convincing them of its essentially *vital* character—that it is something more than 'a game.'

The first paper, by Professor Tufts, 'On Moral Evolution,' is so packed with content that any statement of it in a paragraph or two is bound to be very schematic. Indeed, it is difficult to imagine how the paper from its own inner pressure can escape expansion into a volume. The paper is a reconstructive statement of the factors and processes of moral evolution in the light of recent contributions of the genetic psychology of the individual on the one hand and of social psychology on the other.

In the developed moral experience are found as content: (a) 'the development and idealization of powers giving advance in knowledge, in art and in consciousness of rights'; (b) regard for others under its various aspects of justice, sympathy and benevolence. On the side of method—of the 'how'—there are: (a) the problem of the construction of a standard; (b) the attainment of unity of motive—of whole-hearted interest; and (c) the organization of impulse and ideas into responsible character. The genetic elements are, on the side of the individual, the primitive biological instincts and emotions; on the social side, the various activities of group life.

Part II. of the paper contains a critical discussion of the causal agencies of moral evolution. After pointing out the contributions and the limitations of the 'association' theory, the 'sympathy' theory and Professor Baldwin's 'imitation' or 'polar-self' theory as accounts of

how the individual assimilates the culture and morality of society, Professor Tufts shows that 'we need to add social organization as directing the discharge and organization of instincts and impulses.' From the standpoint of individual achievement the chief factors are, objectively, *opposition* in the physical and social environment and, subjectively, *effort*.

Part III. brings together the 'what' and the 'how' of the preceding analysis in the unity of 'The Process of Moral Evolution.' The general law of development is: (a) formally, the standard presented, at first, not by itself but in persons, comes gradually to explicit recognition; (b) on the side of content, definite and free conceptions of art and science, of self and others, of rights and duties, emerge gradually out of the routine, habitual activities of group life. The real *point d'appui* of this development is found in the fact that organized impulses, habits and customs are constantly developing new relationships of conflict and reinforcement. The account of the stages through which this development passes—especially the passage from the standard of honor to that of right, is illuminating. The illustrative material is abundant and apt.

'The Expansion of Europe in its Influence upon Population' is the caption of Professor Wilcox's paper. Taking his departure from Professor Seeley's lectures upon 'The Expansion of England,' Professor Wilcox asks whether the center of modern history is not to be found in the efforts at expansion, not of England, but of Europe? After the discovery of America and the ocean route to India, did not Europe encounter less resistance in foreign lands than at home? And were not its efforts quite as largely economic as political or military? Did it not strive more or less blindly for the advantage and the increase of the people as much as for the glory and prestige of the state? "To a non-European student of population these questions seem answerable in the affirmative."

Professor Wilcox then takes up the statistics of population and shows that, with a few minor exceptions, the native stocks reached by European powers have increased in numbers much more rapidly than those out of range of European influence. And this increase is not due to any increase in the birth-rate, but to decrease in the death-rate. Mere increase in quantity of human life, however, is not necessarily a good. But this increase in quantity through a decrease of the death-rate due to the development of science, shows that the expansion of Europe is an expansion of the higher qualities of life, and is a vindication of the agricultural, industrial and political type of civilization.

Mr. Woods contributes a suggestive paper on 'Democracy—a New Unfolding of Human Power.' The paper thinks that the past and perhaps much of the current conception of democracy, with its simple formula of a minimum of administrative machinery and equality before the law, is too negative and formal. Such a formula answers very well for revolutionary periods, but is entirely inadequate for the positive and reconstructive needs of the present. The *laissez-faire*, individualistic conception of government in our present industrial and commercial system defeats its own aim. For combinations of individuals engaged in industry take up functions which this negative conception of govern-

ment ignores, and the result is an oligarchy sailing under the colors of democracy. Democracy, therefore, must become positive and constructive to save itself. Its administrations must be *by* the whole people and for the whole people—not by private individuals for private individuals.

Yet Mr. Woods says that his essay is by no means exclusively directed toward the extension of a governmental régime to cover all interests of the economic and social world. For the principles of democracy may in many cases be applied by a voluntary community effort without governmental interference. Just how this is to be done without some kind of organization that would in so far very much resemble governmental machinery is not quite clear from the paper. Mr. Woods says through the great principle of 'association,' and argues that as 'the people by cooperation are carrying on the enormous business of government, why not extend this method further into the fields of industry and culture'? But some may think that government is not a special 'field' of activity coordinate with 'culture and industry.' They may insist that government is simply the *method* of applying certain principles in the 'fields' of industry and culture.

Mr. Woods's treatment of the ancient bugaboo of lack of incentive under a cooperative system, though making no pretense to novelty, is well put and well illustrated.

The next paper is 'An Analysis of the Moral Judgment,' by Professor Sharp. The paper aims to exhibit the basis and nature of moral approbation and disapprobation, of the adjectives 'right' and 'wrong' and of the experience of obligation. The inquiry is to be conducted from the standpoint of moral judgments as employed in every-day life.

The differentia of moral approbation is found not in its emotional content, but in its object, which is always a *purpose*. This distinguishes it from esthetic approval or taste, whose objects are given results, and from scientific or intellectual approval, which is directed upon means to ends. Moral approval must not be confused with habit-custom. For the moral judgment is always *critical*—a judgment of a purpose in relation to other purposes. This makes it always a systematic judgment.

The ground and standard of moral approval the paper finds in the right-wing interpretation of Kant's standard of universality. The moral judgment approves that purpose 'which the person judging approves of every one aiming at under the same conditions' (p. 114). Here some one may ask, as has been asked of Kant: But what is the basis of this universal justification itself?

Some may find the distinction between the content of moral approbation and 'right' in Part II. a little difficult to follow. 'Right' is said to be 'at its lowest,' moral approbation 'purged of all inconsistencies and reduced to a harmonious system' (p. 126). But in the previous analysis approval is not moral except it is critical, and critical approbation surely could not occur so long as consciousness of inconsistencies and lack of harmony remains. Right is the harmonized approbation of my deeper as opposed to the approvals of my surface self (p. 128). But how are we to distinguish the harmony of the deeper self from that of

the surface self? If the harmony of the surface self is felt as a 'surface' harmony, if a deeper self is recognized at the time, there could be no surface harmony.

Professor Sharp's criticism of attempts to distinguish and separate motive and intention and formal and material right and wrong, and his analysis of obligation as the tension between the new ideal and old habits undergoing reconstruction, are well taken.

Professor Woodbridge's paper on 'The Problem of Consciousness' is very reconstructive and thought-provoking. The initial thesis of the paper is that the characteristic positions and problems of modern idealism which are now undergoing vigorous criticism and reconstruction have been determined by the conception of consciousness as worked out by Descartes, Locke and Kant, namely, of consciousness 'as an end term of a relation, the other term of which might be an external world, another mind, the Divine Being or some unknown source of excitation.'

The strained and artificial character in which Professor Woodbridge believes idealism has always appeared to the plain man and the scientist, is due to just this mistaking for an end term what is really a relation. This real but unrecognized relational character of consciousness accounts for the fact that in attempting to play the rôle of an end term it has always tended to reach out and appropriate the other term 'until, as in the post-Kantian philosophy, the source of stimulation was brought within the mind itself and assigned to the mind's essential instability.' The logical outcome of this situation is that no meaning is left in either terms or relation, and experience is reduced to simple given immediacy. In attempting to avoid this result and in restoring, in actual operations, the relational function to consciousness while yet regarding it theoretically as an end term, arise the antinomies of idealism which current criticism is developing.

In the positive part of the paper Professor Woodbridge starts with an analysis of 'the conscious situation,' which he says 'seems resolvable into things related somehow to one another.' Conspicuous among these relations are the spatial and temporal connections. But independently of the space and time relation one thing may *suggest* or *mean* another. "This relation of meaning is just as much a *relation between* them as is space or time."

But just what is this relation of meaning? As Professor Woodbridge observes, the distinction of this relation from others 'must be more than a matter of names.' The author confesses that the paper has not much to answer in a positive way. Its aim is to define the problem. However, there are two or three definite negative statements. (1) It is not to be identified with the so-called quality of awareness. On the contrary, this quality of awareness turns out to be the manifold connections and irresistible meanings which the things in the conscious relation have. (2) On account of its intermittent character it is not a relation from which a system or order of relations could be deduced.

The main questions which, I imagine, most readers will raise are: (1) How can consciousness as a peculiar relation coordinate with and

differing radically from the others and yet all be 'within the conscious situation' itself? Perhaps this means simply that every situation is one in which the conscious relation—the relation of meaning—is present somewhere in it; not that the other relations are all inside consciousness, nor that the whole situation is conscious through and through. (2) Some may have difficulty in regarding meaning as an independent relation coordinate with the others. They may insist that one thing can not *just* and merely mean another, but that it always means it in a spatial or temporal or causal way; *e. g.*, a medicine means relief only *through* certain relations of space, time, cause, etc. Thus some may say, space, time, cause, etc., are but the specific modes of the meaning's relation.

Meanwhile the main point of Professor Woodbridge's paper—the conception of consciousness as an actual relating (and, I would add, to that extent a *constructive*) activity—is most promising to any one seeking escape from the toils of absolutism.

Dr. Norton's contribution treats of 'The Intellectual Element in Music.' To the reviewer the point of most general and vital significance is the writer's view of the relation between the logical and the appreciative phases of experience. He evidently does not regard experience as consisting of two worlds, one of logical relations—a world of description—the other a world of appreciation, each in turn serving as an 'appearance' of the other. 'The function of musical ideas is to control musical experience,' and by control of musical experience is meant the further development and enrichment of the immediate, appreciative experience. Hence how futile is the inquiry whether musical experience is purely immediate. Like all other experience, the dominantly appreciative stages develop differentiations in various ways, lose their solid and uniting character and call for analysis, for logical, scientific activity such as the construction of a scale, rhythm, tempo, etc., as means of restoring themselves at will. Of course this discovery of such means of restoring the appreciative experience means that the restored experience will not be the old one. It will be an appreciative experience developed and enriched through the logical and scientific activity which has restored it. The logical and the appreciative are thus mutual stimuli and limits.

The reviewer's lack of technical knowledge forbids discussion of many specific points which are doubtless very suggestive to more technically trained readers.

In an interesting paper on 'Pragmatism and Kantianism' Professor Raub makes a contribution to a much needed line of philosophical work, namely, an exhibition of the historical connections of pragmatism. However, I am sure many pragmatists will file an objection to the statement that the expounders of pragmatism 'treat it as an essentially new position.' A favorite thesis of pragmatists is that whenever the great classic contributors have sought to escape certain contradictions, irrelevancies of the formulation of insoluble problems, they have invariably been forced into pragmatic positions. That there was no clear consciousness of this would, I suppose, be generally admitted, and is moreover abundantly witnessed in the fact that up to the present the major part of philosophic

activity growing out of these classics has been given to the development of the absolutism instead of the pragmatism in them.

Whether the rediscovery of this immanent pragmatism and the conscious undertaking of the development of its various implications is sufficient to constitute 'a new era in philosophic thought' is an *ad hominem* question which is not likely to be seriously debated, although the difference between a movement which develops absolutism and one which consciously travels in the direction of pragmatism is after all a rather wide one.

The parallelism which the paper exhibits between what the writer regards as the important features of pragmatism and the main outlines of Kant's first 'Kritik' is suggestive. The author admits that the parallelism breaks at a very crucial point—on the question of the absolute finality and fixity of the categories. The paper does not consider the second 'Kritik' in its relation to the first, which must contain a very rich vein of pragmatism.

One or two points of interpretation should be noticed. If one says with the paper that pragmatism, along with Kant, makes the test of truth 'intellectual harmony,' it must be remembered that for the pragmatist intellectual problems, and, therefore, the intellectual harmony, is not a special field of isolated and independent operations. The pragmatist regards the intellectual process rather as a stage in the development and dissolution of tensions, the material, source and goal of which can not be described as merely 'intellectual.'

The paper concludes with the popular verdict on the adequacy of pragmatism based upon the equally popular imputation of an atomistic conception of the individual. How—asks the paper—can pragmatism account for the interaction and correspondence between the universes of different individuals? First, in general it might be said, that this does *not* need accounting for. It is that in terms of which everything else is accounted for. A world of individuals in interaction and correspondence is first the world inside of which all problems fall. Of course, if pragmatism in the course of working out solutions of these problems should, in its psychology or logic, conceive the individual in such a way as to make a world of interaction impossible, it must be held to account. But so far as I know, pragmatists hold that the content of each individual's universe, as such, is just the activity of interaction and correspondence with other individuals. Hence there is no general 'problem' of interaction and correspondence, however many specific 'difficulties' and subordinate problems in this process there may be.

The last and one of the best of the philosophical series of papers is by Professor Lyman, on 'The Influence of Pragmatism on the Status of Theology.' If this is a sample of what may be expected from the application of the pragmatic method to theology, both theology and pragmatism are to be congratulated.

The paper begins with the isolation of theology from the other sciences, due to the fact that when the other sciences became empirical theology remained frankly dogmatic in method. It continued to assume that it

possessed an infallible canon of truth. Historically there were two reasons for this. First, theology in its practical applications dealt with very important immediate problems that demanded a definite norm. Its error was in mistaking this definiteness for absolute finality. Second, theology claimed to deal with the supernatural. Here the dogmatic method was absolutely indispensable.

But the so-called empirical method of the natural sciences fared little better. For it, too, began to regard the elements into which it analyzed experience for practical purposes as metaphysical ultimates as absolute and final as the deliverances of theological dogmatism. The opposition of natural science and theology was thus due to two forms of absolutism whose content by definition excluded each other.

In the method of pragmatic empiricism which does away with static absolutism in every field, Professor Lyman finds the dissolution of the old oppositon, at any rate, whatever new ones may arise, and the promise of a theology possessing the same general canons as other sciences. Theology is already well prepared, on its side, for this reconstruction by its translation in recent years of the supernatural into the ethical and by its increasing use of the historical method in interpreting its content.

Applied to the special problems of Christian theology the pragmatic method would say that its 'absoluteness' and 'finality' must be wholly relative to the historical situations in which it functions. It is, of course, conceivable that Christianity may be pointing a direction for religious development which all other religions may eventually take. But, first, this can not be deduced as a metaphysical necessity; and second, even if this should occur we must remember 'that in a world of growing reality new values may arise, and that these may modify the old values or be quite discontinuous with them.'

A. W. MOORE.

UNIVERSITY OF CHICAGO.

STUDIES IN PSYCHOLOGY

The tribute which this dignified volume offers is not alone to Professor Garman the man, it is also to an academic and educational ideal which has in recent years suffered some obscuration in this country, but which promises speedily to come to its own once more. Original investigation and research, often of a very shallow and specious kind, has been the touchstone by which alone professional work has of late too often been tested. Professor Garman has deliberately chosen to follow an older and less spectacular ideal. He has resolutely set before himself the true teacher's office—the inspiration and guidance of those committed to his charge. To this task he has dedicated his every energy, and his research has been amidst the mysteries of human nature as the sympathetic and scholarly teacher meets this in his students. That his labors have been richly rewarded is well demonstrated by the striking group of men who contribute to this volume, and whom in a fair sense he may be said to have discovered.

Nor must one in such an estimate remain oblivious to the important influence of Professor Garman over the lives of hundreds of other Amherst men whose careers have taken them out of the professional path of philosophic study. The present volume will serve as a permanent and worthy memorial of this service, upon which the outside world may be permitted to congratulate all concerned.

As Professor Garman's own psychological interests have been commonly understood to incline toward the problems of general psychology, it is a rather striking fact indicative of the proclivities of the younger generation that of the five psychological papers in this volume four are of an experimental character and the fifth deals with the subconscious.

The first paper is by Professor Delabarre and discusses in the light of a long series of experiments the 'Influence of Surrounding Objects on the Apparent Direction of a Line.' In general the mode of procedure was to note the effect upon the seeming direction of lines lying in the horizontal and vertical planes when they were surrounded in various ways by other objects in the field of view, *e. g.*, points of light. In physiological terms such other objects constitute stimuli to movements of fixation. In psychological terms they furnish 'bids to attention.'

Professor Delabarre's paper is rather long and not easy to summarize briefly without omitting certain points. In general, however, his conclusions may be stated as follows: "The more a given line is surrounded by a field in which numerous varied objects or features of texture and illumination are distinguishable, the steadier is the eye in regarding it and the more uniform and reliable the estimates made of its direction" (p. 265). "Visible objects tend to cause the eye to turn toward them. If the eye does not actually turn, nevertheless a corresponding tension is introduced, balanced by an opposing tension which prevents movement." . . . "Variations in the line's apparent direction are due to the presence of particular muscular tensions" (p. 286). . . . "I am convinced that muscular tensions furnish all the material that is worked up into the spatial details of our perceptions. But we never formally detect them as muscular tensions" (p. 287).

From these quotations it will be seen that the positive upshot of Professor Delabarre's experiments is a confirmation of those theories of visual space perception which accord a fundamental significance to muscular factors. Like other recent formulators of this view,¹ he conceives the motor effect as exercised, so to speak, *upon* consciousness rather than *in* it.

The experiments contain many variants upon modes of fixation and orientation, distribution of the secondary objects in the field of view, as well as distinctions in the manner of directing attention, *e. g.*, voluntarily and involuntarily. As the author remarks, however, the complexities of the situation have by no means been as yet completely fathomed.

The paper contains a large amount of interesting and valuable material, but its scientific worth is considerably diminished by the failure to bring it into connection with the rich extant literature dealing with

¹ Cf. Carr, 'A Visual Illusion of Motion,' *Psychological Review Monograph*, 1906.

cognate problems. A fuller account of the details of the procedure would also have been welcome.

Professor Swift contributes a suggestive paper on 'Beginning a Language.' He is himself the subject of an experiment in learning Russian, the psychology of the learning process being the point at issue. Working steadily, but without conscious strain or haste, he studied daily for thirty minutes, and then in the ensuing fifteen minutes tested the number of words he could read from exercises in a beginner's text-book. The experiment extended over two and a half months. The employment of the number of words read affords an opportunity to reduce to the form of a curve the progress made from day to day.

Like all experimental studies of learning, so far as the reviewer is aware, the results indicate that the acquirement of any new proficiency of a complex kind proceeds in a spasmodic and irregular manner, periods of rapid advance alternating with periods of retardation and even retrogression, without uniformity and without assignable reason. The author regards his results as confirming previous observations of his own in disproof of the Bryan and Harter distinction between 'lower' and 'higher' order habits as succeeding one another chronologically in the learning process. Professor Swift finds evidences of the presence of both forms from the outset. They may differ in prominence from time to time, but both were present up to the end of this test.

Most of the time during the progress of learning of any kind is spent upon plateaus, a fact which under ordinary class-room conditions must inevitably discourage both teacher and pupil, for it fails totally to suggest the advance that subterraneously is going on. These, however, are the periods of solid achievement, the times when knowledge and dexterity are solidifying into permanent possessions. Examinations taken under such conditions are likely to convey a wholly erroneous impression to the teacher who does not appreciate the situation.

Taken by itself Professor Swift's study is perhaps rather slender to support the weight of the generalizations which he rests upon it. Moreover, the technique of the procedure seems to the reviewer to be characterized by more limitations than Professor Swift is disposed to recognize. But the work is extremely suggestive, and it is to be hoped that others will submit themselves to similar tests. The conditions are sufficiently representative of ordinary school work to give the results a valuable practical significance quite apart from their psychological merit.

Professor Pierce has an admirably written and well-matured paper upon the prevailing doctrine of a detached subconsciousness, against which he vigorously appeals. One's views in the matter at stake are in the last analysis possibly determined more by temperamental bias than by cold logic. But the author does all that he can to envisage his problem dispassionately and with due regard to demonstrable fact. It requires no small courage to confound the advocates of the 'split-off consciousness,' for they are many in number and count among themselves those who sit in very high places. This is not the first occasion, however, on which Professor Pierce has broken a lance with them.

The author first discriminates several divergent meanings of the term subconscious, selecting as the target for his own fire the 'split-off consciousness' concept referred to above. He then postulates these canons of procedure to hold in the subsequent examination and discussion. (1) "Inference and observed fact must be relentlessly discriminated" (p. 326). (2) "Of two or more possible explanations for a given fact or set of facts the simplest is always to be chosen." (3) "If aid in explanation is to be sought through analogy, it is analogy with the simple, normal, well-established, or already accepted that is always to be given preference over that with the complex and exceptional."

Adhering to these familiar but often flouted principles of scientific investigation, he submits to critical dissection one after another of the phenomena commonly adduced in demonstration of the detached subconscious, *e. g.*, the anesthetics, amnesias and aboulias of hysterics, the sudden creations of genius, the facts of automatic writing and crystal gazing, alternating personality, etc. As a result of his exploration he concludes that the most elevated status to which the split-off subconscious could possibly aspire in the face of the facts would be that of a working hypothesis. But in this station it already has a perfectly worthy and satisfactory predecessor, *i. e.*, the theory of cerebral or neural bases for mental activities. It is not possible to do justice to the force of Professor Pierce's penetrating analysis in the space at command, but a few sentences may be quoted to indicate the general lines which he follows.

"The reason why the doctrine of subconsciousness has made such an effective appeal . . . is, I suppose, because it furnishes a way of discoursing about certain unusual phenomena so as to make them descriptively continuous with usual phenomena of the same or similar type." "These illustrations may be taken as typical of the kind of continuity which, it seems to me, has been too diligently courted. It is a *descriptive continuity* chiefly,—a continuity whose principal merit lies in its perpetuating, by easy use of analogy, the habitual and thus most comfortable way of envisaging the phenomena involved. Over against this variety of continuity we have endeavored to place what may be called *explanatory continuity*, the unremitting aim of which is to refrain from introducing new types of explanation in any series of similar phenomena. . . ." "Thus we have endeavored to range automatic writings under the head of mechanically producible movements, and to view the inspirations of genius as identical in type with all processes that arrive in consciousness without direct external excitation. The attempt to maintain a descriptive continuity . . . has led to a fashion of speaking about the subconscious as if it were a completely demonstrated fact. And from speaking of it in this way, its advocates have come to regard it as unquestionably existent." "And the problem confronting him who strives for explanatory continuity is whether he shall assume a subconsciousness to account for various mental oddities . . . or shall try to understand these latter by appealing to the same assumptions of cerebral disorder or cerebral peculiarity which have proved satisfactory enough in such cases as aphasic utterances and maniacal ravings." "It is with

the entire conviction that the dictates of a logically demanded explanatory continuity require the consistent and thoroughgoing extension of the psychophysical point of view that the arguments of this paper are submitted . . ." (pp. 347-349).

The two final papers in the volume deal with substantially the same subject. Professor Woodworth writes on the 'Cause of a Voluntary Movement,' Professor Burnett on 'An Experimental Test of the Classical Theory of Volition.' The latter paper is very brief and destitute of correlation with other experimental work directed in the same channel.

Professor Woodworth's paper is extremely interesting and suggestive and negatively at least possessed, I think, of great value. Its positive conclusion, however, embodies a fallacy which I regard as peculiarly seditious and subversive of sound psychological thinking. I therefore raise against it the protesting hand of injured orthodoxy.

The author puts his question in this way: "What is the really effective factor in the consciousness immediately preceding a movement, that gives it its motor power?" (p. 351). He experimented upon thirteen persons, having them execute various movements and attempt introspectively to report their mental experiences in the moment just preceding action. Despite many reports of imagery, kinesthetic, visual, auditory, etc., and despite many cases in which sensations were present, a large number of instances are reported in which neither sort of element could be detected, and Professor Woodworth evidently thinks that in many cases where these factors were found they were supernumeraries and not indispensable causative elements. He concludes, therefore, that neither images nor sensations are indispensable antecedents of volitionally controlled movements. He thinks we must conclude to the operation of naked thoughts. "The thought may be clothed in sensorial images, . . . but they are after all only clothes, and a naked thought can perfectly well perform its function of starting the motor machinery in action and determining the point and object of its application" (p. 392).

The reviewer takes issue with this conclusion on three scores. (1) The procedure adopted is incompetent to the securing of the conclusions reached. (2) The results reported do not prove what is alleged of them. (3) The 'naked thought' concept is a logical abstraction finding no real psychological basis in a careful examination of consciousness.¹

To do justice to either Professor Woodworth or myself on these points of difference would require more space than can properly be taken, but briefly my criticisms come to this: As regards the first point, I object that [as I understand the report] all the movements examined were too well mastered, too habitual, to throw fairly into the foreground the sensory-ideational elements emphasized in gaining control of them. Bair's study,² quoted by Professor Woodworth, shows clearly how helpless we are in getting control of a really new coordination until sensory material comes in to help us out. Indeed, the author's account of his own experi-

¹ On a heresy germane to this, i. e., 'imageless thought,' see a discussion between Professor Stout and the writer in the *Philosophical Review*, 1897, 1898.

² *Psychological Review*, 1901.

ments upon control of the toe movements brings out the same fact, of which, however, he seems to be oblivious.' In such experiments as we are here dealing with the mere command, heard or seen, is a quite sufficient cue to produce the movement, for what Professor James calls the 'remote ideas' have had ample opportunity to become associated with their appropriate consequences, and a command constitutes one of the various forms the remote idea may take.

Under point two, I should say that the occasional inability to detect sensuous forerunners of the act did not indicate the existence of naked thoughts, but simply the condition suggested in the paragraph above, *i. e.*, a causal (in the author's sense) connection between verbal thoughts given as commands (auditory or visual) and specific movements.

Under the third point I urge that the doctrine of the 'naked thought,' the 'imageless thought,' is based on a radically erroneous identification of the meaning, or cognitively dynamic, aspect of all thoughts with a distinct psychic entity. The attempt to summon Professor James's relational activities to the support of this pale entity, as well as the effort to find comfort for it in the activities of the associative centers, are alike calculated simply further to confound confusion.

On the negative side there are many points of interest in the experiments and a number of issues are raised which will well repay investigation. The whole course of the investigation indicates that the 'classical theory,' if sound, needs further exegesis. The author and the reviewer, for example, evidently interpret it differently. The relatively small representation of kinesthetic elements is significant, and the considerable number of these which are certainly peripheral and not central in origin bears upon the recent discussions of kinesthetic imagery, to which, however, the author does not refer. He comments, too, upon the disparity which often obtains between the preliminary image of a movement and the movement itself when this occurs. This disparity attaches to the rate of the movement, its precision and other qualitative characteristics. But all these observations, however intrinsically interesting, lose most of their crucial significance and become irrelevant for the present issue because of the relatively habitual nature of the movements studied, which require for their execution only the slightest and most transitory of 'remote' cues. I have no doubt, therefore, that Professor Woodworth is correct in regarding most of these reported images as unessential hangers-on.

Professor Burnett's experiments were made only on himself, and hence have a more limited bearing than those just under discussion. He found that when he voluntarily attempted to secure images of various movements, the rates at which the movements were executed was considerably in excess of the rates at which they were imaged. The movements were of the rhythmic kind represented by tapping. He employed chiefly kinesthetic and visual images, but a few tests seem to have involved auditory images also.

— 'Attention was directed to the toe itself, to the sensations arising in it . . .' (p. 367).

Like Professor Woodworth's work, this experiment is intrinsically interesting as a study in the disparities between our motor capacities and our abilities to frame definite images of the movements involved in these capacities. But also like that study, the procedure appears to the reviewer incompetent to the task of supporting the conclusions erected upon it. No test based upon *habitual* movements can hope to reveal the inner mechanism of movements in the early stages of voluntariness when control is being acquired. And it is only here that unequivocal and relatively easy introspection is possible. So far as I know, no defender of the 'classical theory' has ever contended that a premonitory image definitely precedes each step in a series of well-established coordinations like tapping. It is the whole act—consisting of an indefinite number of taps—for which we give the cue, and in such a case again the cue may be a command or some utterly fleeting image. But in some form or other adequate introspection will, in the reviewer's judgment, always reveal some anticipatory conscious process in which sensuously colored material is present. To say that 'any mental state whatever may be the antecedent of an intentional act' is in no way to circumvent this assertion, because there is no mental state whatever wholly destitute of all sensuous content.

JAMES ROWLAND ANGELL.

UNIVERSITY OF CHICAGO.

JOURNALS AND NEW BOOKS

ANNALEN DER NATURPHILOSOPHIE. July, 1906, Band 5, Heft 3. *Bausteine zu einer neuen chemischen Theorie* (pp. 271-291): F. WALD. - An attempt to state the problems of chemistry so as to make them susceptible to mathematical treatment. *Gegensinn und Gegenlaut* (pp. 292-302): C. ABEL. - Numerous illustrations of the principle that from a given root there tend to develop meanings precisely opposite to each other. *Persönliche Energie* (pp. 303-320): J. WALDAPFEL. - On the one hand, the factors of morality, versatility and adaptability are reducible to versatility, which is a magnitude (*Grösse*). On the other, strength of character, interest and bodily power are reducible to interest, which is a power (*Stärke*). That is, all kinds of personal energy, like all other energy, can be distinguished as capacity and as intensity factors. *Ueber die Anwendung psychopathologischer Erkenntnisse auf gesellschaftliche und geschichtliche Erscheinungen* (pp. 321-348): W. HELLFACH. - The abnormal mind is a subject of the social sciences in two ways: as example of a type, the laws of whose social influence social science must discover; or as an historical personality. The abnormality, in either case, may or may not be significant: it was in Goethe and Hichte; it was not in Kant. A greater store of facts is now needed, not a logical discussion, to prove the existence of a psychopathological branch of sociology. *Das Beurtheilen perspektivischer Abbildungen in Hinsicht auf den Standpunkt des Beschauers* (pp. 349-377): A. v. OTTINGEN. -

Perspective constructions may be made independent of all or any of the supposedly fundamental elements. The changing position of the beholder complicates the artist's task; but this rule holds, that the apparent depth of any point of the horizon is proportional to the distance of the eye. A revised nomenclature and system of definitions follows. *Ueber die Grundsätze und Hauptbegriffe der Mechanik* (pp. 378-394): VL. v. TÜRIN. - Five important theses are advanced, which support the concepts of energetics to the rejection of those of mass and of action and reaction, and to the limitation of the formula of the parallelogram of forces. *Neue Bücher*: W. O.: H. Dinger, *Dramaturgie als Wissenschaft*. P. A. Möbius, *Ausgewählte Werke, Band VI, Im Grenzlande*. H. Driesch, *Natur u. Kulturphilosophische Bibliothek III*. W. Jerusalem, *Der kritische Idealismus u. die reine Logik*. W. Meyer-Rinteln, *Die Schöpfung der Sprache*. G. W. Leibnitz (übersetzt von A. Buchenan), *Philosophische Werke*.

Binet, Alfred. *Les révélations de l'écriture d'après un contrôle scientifique*. Paris: Felix Alcan. 1906.

Congress of Arts and Science, Universal Exposition, St. Louis, 1904. Edited by Howard J. Rogers, A.M., LL.D., Director of Congresses. Vol. VI. *Medicine, Technology*. Boston and New York: Houghton, Mifflin & Co. 1906. Pp. ix + 740. \$2.50 net.

Eucken, Rudolf. *Beiträge zur Einführung in die Geschichte der Philosophie*. Leipzig: Verlag der Dürr'schen Buchhandlung. 1906. Pp. iv + 195. 3.60 M.

Fullerton, George Stuart. *An Introduction to Philosophy*. New York and London: The Macmillan Co. 1906. Pp. xiii + 322.

Lang, Sidney Edward. *A Primer of General Method*. An introduction to educational theory and practise on the basis of logic. Toronto: The Copp, Clark Co. 1906. Pp. x + 224.

Whittaker, Thomas. *Apollonius of Tyana, and other Essays*. London: Swan Sonnenschein & Co. 1906. Pp. 211. 3s. 6d. net.

NOTES AND NEWS

THE Science Press announces that hereafter the series known as *Archives of Philosophy, Psychology and Scientific Methods* will be conducted as two series, known as *Archives of Philosophy* and *Archives of Psychology*. The former will be under the editorial direction of Professor Frederick J. E. Woodbridge and the latter under that of Professor R. S. Woodworth, both of Columbia University.

DR. JOHN FREDERICK SHEPARD, formerly assistant in psychology at the University of Michigan, has been promoted to be an instructor.

DR. PIERRE JANET is lecturing on hysteria before the Harvard Medical School.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

A PROBLEM OF EVIDENCE IN RADICAL EMPIRICISM

IF one were inclined to derive light and solace from epigrams one might well say that the intellectual labors of the ordinary man consist in gathering facts and their evidences, while those of the philosophers are peculiarly identified with the task of learning the relation between facts and their evidences. Whether such a summary phrase tells the whole truth or not, at any rate it states a goodly part of it; for theories of knowledge and theories of existence have thus far been little more than theories of the relations obtaining between accepted or rejected facts and the grounds of their acceptance or rejection. Men accept certain things naïvely; in times of stress they search for justifications of their belief: finally, given the scheme of justification—to be called science, religion, logic, or even philosophy, according to the attitudes taken by men of different temperaments toward their final world views—the professional philosopher appears upon the scene, prepared to dissect the established systems of bolstered beliefs. And in the structural relation discovered between facts and their proofs he hopes confidently to find a fact profounder than any of those being scrutinized.

This hope and this procedure are found imbedded in the philosophical attitudes of modern thinkers, most conspicuously, though, in the thinking of genetic psychologists, humanists, pragmatists and radical empiricists. Not what men believe, but how they come to believe what they do, and the relation of beliefs to reasons—this is the great theme of to-day and of every day. And the reason for its greatness consists in its retroactive bearing upon human beliefs; knowledge about the peculiar conditions under which a belief comes to be evidenced for or against must, we are told, influence the belief itself. As confirmatory of this claim, one might readily cite the humanists' revelations of postulates and aver that any beliefs whose proofs appeal to these postulates in any way are thereby strengthened not one whit.

This matter of the postulates I do not choose to discuss here inasmuch as there is a somewhat profounder and more perplexing issue

raised in the case of the relation between facts generally and their empirical existence. This, too, has been viewed and treated as what may well be called the limiting case of the relation between facts and their evidences; in it, then, we may expect to find the controversial points whittled down to exceeding sharpness. The situation is as follows: The radical empiricist claims that 'while one part of experience leans upon another part, experience as a whole leans upon nothing,'—is self-sustaining, in short. Both physical and psychical orders are wholly inside of experience, therefore, being nothing other than experienced qualities standing in different sorts of relations to one another. This much is stated as conclusion. Turning to the reasons leading up to the above view, we find them all consisting in certain assumptions about the relation between facts and their evidences. The following illustrations will make this clear:

1. "Whatever terminates the chain of intermediary acts realizing or exemplifying a meaning was, because it now is, what the idea—the intended meaning—'had in mind.' " This assertion reduces to a declaration that what is actually meant by any given thought is identifiable with the demonstrable or demonstrated meaning. The demonstration consists, roughly, in giving concretely the tangible, empirical things meant. *The thing originally meant is a part and function of its own evidence*, we are informed.

2. For this reason apparently the second assertion is made, namely, that a thing and the sensation of it are identical. The supreme evidence of anything is, generally speaking, the evidence of the senses. What a thing is—means—is what it is sensed (perceived) as. In the ideal, limiting case of evidence there is no difference between the thing and the evidence of its nature and existence. Or, to use an old phrase with slightly altered meaning, a directly experienced thing is self-evident, or, better, self-evidencing. *The limit of evidence is the thing to be evidenced.*

3. Most significant, though, is the assumption involved in the arguments for the autonomy of experience and against the reality of transmentals. It has been noted by sundry radical empiricists and allied thinkers that every evidential fact, every confirmation or explanation of whatever degree of convincingness, is itself empirical. This has led its discoverers to declare that every fact is empirical and only empirical; all of which assumes that *the empirical character of all evidential facts, situations, objects, etc., constitutes an invariable part of the evidence.*

4. This assumption is often used by radical empiricist and subjectivist alike, notably in arguments against transmentals. For instance, we are told that every attempt to prove the possible existence

of transmentals leaves us in an endless regress. As soon as you assert your belief in a transmental you must either describe this by intelligible words or refer to immediate experience to signify what it is,—so we are told. Every time a new description or reference is made, a regress to new experiences is accomplished, and this must be repeated indefinitely.

The reader will readily recall many other familiar illustrations like these. Let us now look at the problem in the logic of evidence which appears in the above declarations. Is it true that the empirical character of evidential facts constitutes a new fact to be added, as further evidence, to these same evidential facts? Is it true that the empirical character constitutes evidence for or against any fact whatsoever?

Our answers to these questions may first be very general; we may say that it is logically possible that certain features of evidential facts may be wholly irrelevant to the matter to be evidenced. Thus, if all the testimony against an alleged criminal were delivered in English, this fact would not necessarily constitute evidence for or against the defendant. Again, if all the testimony of eye-witnesses to a deed came from blue-eyed persons, nothing would be gained from this coincidence. Generalizing, we may say that common features of evidential facts may or may not constitute evidence about the evidential value of these facts or about the thing to be evidenced. We must now inquire whether the particular feature of 'givenness' is or is not such evidence.

At the threshold of our problem we encounter another which, lackey-like, must be treated before we may go further. It is the problem of distinguishing description from evidence. Perhaps in this we may eventually find the master-problem disguised. The radical empiricist and his sympathizers are frankly engaged in describing the eddies, currents and fluids in the stream of consciousness; when telling what a given thing means they point out the particular kinds of experiences in which the fulfillment of the meaning terminates. Meaning is identified with fulfillment of meaning. In like manner, to tell what a thing is is to indicate certain embodying sensations and feelings. It is not enough to indicate the sensed or felt qualities, for these latter are inextricably bound up with the psychic states in and through which they appear; appearing quality and act of appearing are merely different aspects of one and the same pure experience. Granting this to be a correct description, which I think we may with some slight later qualification, are we free to follow the radical empiricist in his next step of giving both aspects in question the same logical rating as evidences for the autonomy of experience?

I feel sure that we are not at liberty to do this, and for the very obvious reason that a mere description, however accurate, proves absolutely nothing about the implications of the things described. Description bears the same logical relation to evidence that deduction bears to induction, roughly speaking. This is precisely the case when description is strictly internal (and hence abstract), the result being literally an analysis of the given and nothing more. The parts reached through analysis always have certain implications, *i. e.*, stand in certain definite relations to other objects; but the mere empirical presence of the parts does not constitute their external relations nor their internal structure. There is no need of citing cases to prove this point, for the most radical of empiricists will grant it. A description of the contents of a given empirical moment, therefore, simply indicates the evidencing facts, but is not itself evidence.¹ One fact is evidence for or against another one whenever the former is experienced somehow or other as involving the existence of certain peculiarities of the latter. This evidential relation itself has to be experienced, to be sure; but here, just as in the original instance, the relation is in no wise characteristically qualified by its own empirical existence. We might, with only a slight risk of misinterpretation, revive Kant's cry in a new form and say that *empirical* existence is not a predicate of objects.² This is substantially what the pragmatist means when he says that 'things are given in the most diaphanous medium imaginable.' Waiving momentarily the problem as to the influence a supposed medium might have upon mediated objects, we may probably succeed in inducing the pragmatist to admit that at least some of the mediated objects relate to one another with the most superb independence of the medium real or fancied.

In reply to all this the radical empiricist has a ready and effective remark. Every fact about which anybody can raise a discussion must *ipso facto* be experienced. In spite of all apparent independence in the variations of things with respect to their bare empirical existences, the hard truth still remains that this very independence so dear to the realist is known only in and through an experience. And with this unchallengable fact that independence itself depends upon

¹ It is understood here, of course, that description is merely non-evidential with reference to the described facts and their implications. It ought to go without saying that any description *as act* is itself a fact of another order and capable of having its own implications. This point will be dealt with in another connection later on.

² I would not have this construed too literally; the Kantian thesis rests upon a misconception about the nature of existence. Existence in the sense of possessing certain relations, being involved in *something else*, gives us a very different view from that held by Kant. The above allusion is more literary than literal.

experience in order to be known, the realist's house of cards tumbles to a purely empirical floor. This oft proclaimed fact is the one which has been hurled at the heads of transcendentalists since time immemorial; it is the ancient cry of the sensationalist, the idealist and the empiricist. It seems overwhelming, this proof that we can not jump out of our own skins. And yet I make bold to say that there never has been and—let us pray—never will be a philosophical dogma more equivocal, more misleading, more hopelessly corrupt than this crushing *credo* of our contemptuous contemporaries. If this be orthodoxy, then is truth of the devil. And if it be orthodoxy, it would be piety to squelch it.

The squelching, though, is so very simple that it runs the danger of being rejected as inadequate. It is, in brief, this: the empiricist is guilty of the most glaring *petitio principii*. All that he says is that, in order to know an object to be somehow independent of experience, this independence must be itself experienced. Nobody would care to waste breath in denying this crass tautology. Nobody has ever imagined that a certain thing, in order to be *known* as having a certain character, need not be known as having that character! In order to make the known thing identical with the knowing of it, the radical empiricist is forced to the pitiful makeshift of pleading that the thing is never *known* to have that character save when it is *known*! May the gods refrain from interrupting us here with bursts of laughter! The grand *finale* is yet to come. This startling fact gravely revealed to an audience expectant of portentous things is declared to be evidence for the hypothesis that nothing (experienceable) can be in any true sense independent of experience and, conversely, that experience as a whole leans upon nothing. After hearing this verdict of radical empiricism, I am sorely tempted to put the radical over the empiricism and call the root of the matter an irrational. For, in bare syllogistic form the theory reduces to this:

1. *A* stands in a certain relation only when it is in that relation.
2. Therefore the existence of *A* in that relation proves that *A* can not exist save in that relation.
3. *Suppressed minor premise*: That relation of *A* is *A*'s only relation.

But this suppressed assumption is just what the radical empiricist supposes he has proved by his observations and analyses of experience. We are free now to turn loose his blood-brother, the humanist, upon him; the blood-brother will show his misguided relative, perhaps, that the autonomy of experience has been a postulate all the time and that the *bizarre* concatenation of facts and conclusions is

like a dachshund eating his own tail and deriving sustenance therefrom.

Let us leave the comedy to which we have been invited by alluring bill-boards. Turn to the precise formulation of the erroneous theory of evidence underlying the radical empiricist's hypotheses. Does that theory not reduce to the following postulates?

1. The common peculiarity of all evidential facts constitutes the real limit of the evidential function of these facts. In other words, *the genus determines the classes and genera to which its own members may belong. All evidential facts are ipso facto members of the genus, 'experiences.'* This genus exercises a limiting control over its members in such a way that none of these can be members of some other genus (of the same or higher order). Any implications of empirical facts which make these or other facts appear to be something more than members of the empirical genus are to be rejected as errors. From this follows, as a logical *postulate*, what the empiricist has advanced as a conclusion:

2. There can be no other equally inclusive genus. 'Empirical fact' is identical metaphysically with 'existence.'³

The ordinary man, after realizing the meaning of all this, feels justified in asking the radical empiricist where and how he has discovered this unique characteristic of the experience genus. Is there any evidence, even that of simple analogy, presented within experience which hints at this curious logical 'eminent domain'? The answer is apt to be negative, for both psychologist and biologist and naïf man agree that experience is, in some slightly understood manner, an outgrowth and function of something *not merely* empirical. If the radical empiricist accepts this hypothesis, is he not forced into the dilemma of saying either that experience can not be, *quâ* experience, an evidence of its own self-sufficiency or else that experience is essentially self-contradictory? Would not the horrors of Hegel warn him against this second horn? Would it not be necessary to confess, after all, that the bare empirical character of experienced things—far from proving either the omnipotence or the triviality of experience—is absolutely non-evidential (at least in our present problem)?

WALTER B. PITKIN.

COLUMBIA UNIVERSITY.

³ Let us not burden the radical empiricist with the paradox of self-representation here. Some of his partners in logical crime have shackled themselves with their own handcuffs by observing, in the above postulate, that 'existence' is itself a member of the genus 'experience' and that 'experience as a genus' reappears within the genus 'experience.' Then follows the delirium of philosophical mathematics and mathematical philosophy. Great are the penalties of little sins if these sins be in logic.

DISCUSSION

UNITY AND THE WORLD GROUND

MR. SCHILLER'S interesting treatment of the problem of unity in his article entitled 'Idealism and the Dissociation of Personality'¹ suggests a crying need for a more definite determination of the kind of unity we should attribute to the world ground. Small agreement exists among authors as to what are the essentials of this unity. It is said, idealism fails to secure a true, fundamental unity because of the extreme contrast between the unity as found in the finite mind and that claimed to be in the universal mind. A quotation from the above article will best serve to develop our purpose. It is said, "In a sane human mind the contents of its consciousness exist harmoniously together; they are not independent of, nor hostile to, each other; they succeed or even supplant each other without a pang, in a rational and agreeable way; even where there is what is metaphorically called a mental 'struggle,' the process is not painful to the contents, but if to any one, to the mind as a whole which feels the struggle and the distress. If, on the other hand, we conceive ourselves as thoughts of a universal mind, what a chaos we must think that mind to be! How strangely dissevered into units which seem independent and shut up in themselves! How strange that each of its thoughts should fight for its own hand with so little regard for the rest, and fight so furiously! How strange, in short, upon this hypothesis that the world should appear as it does to us!

On the face of the apparent facts, therefore, it can not be denied that the assertions of idealistic monism are not plausible. The world on the face of it looks like the outcome of a rough-and-tumble tussle between a plurality of constituents, like a coming together and battle-ground of a heterogeneous multitude of beings. It seems, in a word, essentially pluralistic in character. And if, nevertheless, we insist on forcing on it a monistic interpretation, does it not seem as though that monism could only be carried through on the lowest plane on which existences really seem to be continuous, *viz.*, as extended bodies in space? In other words, must not our monism be materialistic rather than idealistic?"

In analyzing this quotation one finds a striking variation in the criterions for unity. In what shall a metaphysical unity consist? For instance, shall we say that a harmonious togetherness is more of a unity than a distressing togetherness? If so, what kind of harmoniousness should we seek? But is not a fundamental unity

¹ This JOURNAL, August 30, 1906.

essential to any hostility? The absence of pain is surely not a greater proof of unity than the presence of pain. Does a rational and agreeable procedure possess the only patent right to final unity? Is even chaos possible except in a true unity? Disagreement as well as agreement, pain as well as joy, discord as well as harmony, chaos as well as order, if real, mean nothing if not included in some form of a real structural totality.

It is sometimes said that the world of facts exhibits only mutual changes or concomitant variations, but that in order to explain this fact we are impelled to assume a dynamic interaction of things; which interaction in turn implies a unitary self-sufficient world ground. This view arises from the notion that mutual variations in time are only formal relations, independent and separate from things and real only in particular minds; that the only real objective relation is dynamic determination. This is certainly a common scientific attitude, and a view-point of Lotze and Bowne. And yet our talk about the mutual change of the world of facts means nothing if not a reality of the facts, which again is as real an implication of the unity of the world as any dynamic interaction you might choose to have. The denial of interaction might imply the 'falling asunder into dynamically disconnected units,' but not into a totally disconnected plurality. Even a real plurality would mean nothing except as it expressed some form of a structural unity, at least of totality and exclusion.

Withness or togetherness is as true a unity as any unity you may choose. It is merely one that allows disjunction in the quality continuums of the content, in contrast to its extreme opposite type, which requires an absolute non-differentiation.

The problem of pluralism and of monism is not a problem of total disjunction *versus* non-differentiation, but a problem of the choice and implication of types of unity. What unity shall we consider final? What other forms of unity does it imply? For instance, it is quite possible that a mutual variation implies dynamic unity or that a withness implies a conscious unity of manifoldness which in turn may imply some form of dynamism. Whether that be so or whether experience demands that all things shall dynamically effect each other only externally, or whether a certain part of the world shall have a through and through dynamic active relation while other parts exhibit only external mutual changes, in any case it is a question of the implication of unities and of the consistent use of those implied.

In contrasting the unity of the finite mind with that of the infinite, the extreme difference in the unity of the contents of a finite

mind is pointed out as a discrepancy in the analogy of a universal mind. A struggle between the contents of a finite mind is said to be painful not to the contents, but to the mind as a whole. On the other hand, the universal mind must be one in which pain is pain to the content as well as to the whole mind. In what sense is it true that in a finite mind a struggle or pain is such only to the whole mind? In some sense a pain in one's arm can hardly be said to be painful in the color experience of the paper on the wall. It is not in the color experience of the paper on the wall nor in various other simultaneous experiences. It is clear that to say it is painful to the mind as a whole is to refer to one type of unity expressed in finite minds; a type to which, no doubt, we most often as personalities refer, but which is not the only meaning of wholeness that appeals in our life. When we say it is painful to the mind as a whole we refer to a unity of manifoldness; a unity of transcendence as illustrated in our perception of the extent of colored surface. When we emphasize the mutual isolation of experienced contents and thereby deny their presence in the mind as a whole, we refer to a type of unity which we may call a unity of quality continuums in the content; a unity that does not recognize transcendence, which, however, in reality may be there. This non-transcendent type of unity is most commonly experienced in our dealings with the physical world. Each of these types of unity plays equally forceful parts in our mental life, or we should never have had the strenuous opposition of sensationalism and spiritualism.

If we seek to analyze in what sense a finite pain or other experience is not a pain, etc., to the content, we find it becomes increasingly difficult to tell. The pain, though it be only a so-called state of a larger fact and though it be completely present to the manifold consciousness, nevertheless has an individuality of its own or it could not even be a state. An absolute dependence means an absolute non-differentiation; the type of unity sought by Plotinus, the mystic. Individuality may vary all the way from mere quality distinction to kinesthetic action and free will; from localized feeling to a manifold awareness as expressed in selves. Though we in normal life are directly aware of the higher forms of individuality to only a limited extent, yet even if we were directly aware of other free-will acts and feelings of other conscious selves, it is difficult to conceive our unity of manifoldness as essentially different in kind from that we now experience in relation to the qualities of perception. There would not be a unity of quality continuum through action, since there would be strife, nor in purpose, since there would be opposing ends, nor in desire, since there would be a difference

in meaning, but there would still be a unity of transcendence to which the contents would be also immediate facts. The contents in one sense would not be the universal fact any more than we could say the color space we perceive is we. And the Infinite in realizing our ignorance would not thereby become blind any more than we, in realizing the color or sound, become solely color or sound. The infinite unity, according to such a view, though realizing to the fullest the finite life, would not necessarily be exhausted therein. There would be practical usage in finite life for saying God and the world are one and God is not the world. The unity as thus described would be more than a material unity. A material unity is never a unity of manifoldness; it essentially neglects transcendence.

Suppose, though, one insists on a monism 'carried through on the so-called lowest plane on which existences really seem to be continuous, viz., as extended bodies in space.' Suppose one proposes a materialistic monism. From an analytical point of view, how, after all, shall we differentiate this type of unity from the supposed higher idealistic unities? The limits of the article forbid more than arbitrary statements of our point of view. Three ideas seem commonly to be characteristic of space and matter. First, in space we have an extensive use of the identity of exclusion in which any part is presumed to be restricted to itself and which does not of itself have any reference aspect, either internally or to facts outside. This is commonly expressed by the assertion that space and matter are unconscious, dead facts. As one author puts it: "The law of space is the mutual externality of every part to every other." Second, there seems to be no finality or determinate organization of the portions of space or matter, *i. e.*, the divisions and the so-called relations of the parts of space and of matter seem absolutely arbitrary. Third, there seems to be no real aspect of wholeness from the point of view of space or matter as commonly viewed. Every unity ascribed appears to be formal and external. As Bradley puts it: "A space or a part of space that really means to be a solid is a self-contradiction. Anything extended is a collection, a relation of extendeds, which again are relations of extendeds, and so on indefinitely"; a statement not true of space as experience fact, but only true from a certain abstract point of view; a position which when realized implies not a breaking up of a unity into finer and finer pieces, but a total ceasing of all spatial fact, *i. e.*, the difficulty of space is not that of infinite divisibility nor that of infinite continuity, but the use of space as an ultimate limit of the notions of exclusion or indifference, arbitrariness and non-transcendence; notions detrimental to true unity.

However, what shall we say is the character of the unity obtained between the world mind and finite mind by the use of the concept of a changing threshold? Says Mr. Schiller: "It is clearly quite easy . . . to conceive individual minds as arising from the raising of the threshold in a larger mind, in which, though apparently disconnected, they would really all be continuously connected below the limen, so that on lowering it their continuity would again display itself, and mental processes could pass directly from one mind to another. Particular minds, therefore, would be separate and cut off from each other only in their visible or supraliminal parts, much as a row of islands may be really the tops of a submerged mountain chain, and would become continuous if the water-level were sufficiently lowered." A lowering of the threshold means a becoming conscious of. A raising of the threshold means a ceasing to be conscious of. Hence a raising of the threshold in the larger mind means a diminution of the consciousness of that mind, at the expense of which there appears presumably an increase of consciousness among the finites. What would the apparent disconnection thus mean? To whom would it be apparent? What, might we ask, would the real connection below the limen be? To what mind would it be a present real? If not to any, then evidently we fall short of idealistic monism. But shall we say the continuity found upon lowering the threshold is the same identical fact it was before it became an experience in some mind? If so, then evidently we are not contending for idealistic monism. But to identify experienced fact with non-experienced fact seems absurd. What, though, is our criterion of a mental fact? To be a mental fact seems to be a fact of consciousness, and when it is not a fact of consciousness it seems to be no fact of mind at all. A ceasing from the consciousness of the large mind would hardly mean a transference of that state to a finite mind. It would, indeed, be a puzzle to tell in what its reality consisted upon its severance from the large mind. It would be difficult, indeed, to show what its incorporation as a state of the little minds would mean. However, a lowering of the threshold in finite minds would clearly seem to mean an inverse change in the larger mind; a situation clearly at variance with fact as described by idealistic monism. By this inverse change in the consciousness of the finites and that of the universal mind a theoretical point might be reached by a lowering of the thresholds in all the finites, where the large mind would vanish altogether and pluralism would again be the problem; a situation hardly acceptable to idealistic monism. If it be said, a lowering of the threshold means simply an increase of knowledge and not necessarily an inverse relation as asserted above,

our problem is thereby merely proposed anew, for we have now to determine what kind of knowledge we mean.

The illustration of the row of islands would hardly satisfy idealism, for the plurality of the islands is an external plurality. Internally, according to the illustration, all finite minds would be as immediately conscious of the infinite mind as is the infinite of them. To whom would the water-level belong? Evidently we have here a dualism which idealism would fain accept. But in any case, is not the unity of the water and islands as true a unity as that of the submerged mountain chain?

J. H. FARLEY.

LAWRENCE UNIVERSITY.

THE MAD ABSOLUTE

MR. GORE, in this JOURNAL for October 11, tries very neatly to turn Mr. Schiller's joke on the absolute against the joker, and I suppose that those whom the latter gentleman's jokes vex are correspondingly content.

But are the tables turned?

It is *we* in our dissociated, finite shapes who are mad, says Mr. Gore, and not the absolute. The absolute in its integrated shape is the very beau ideal of sanity, and in our own successful quest of it, he adds, lies our only hope of cure. Get confluent with one another, restore the original unbrokenness of our infinitely inclusive real self, and the universe will wake up well.

But in the name of all that's absolute how did it ever get so sick? That we finite subjects are sick we know well enough, and no philosophy beyond the plainest lessons of our finite experience is needed to teach us that more union among ourselves would be remedial. But if all these distracted persons of ours really signify the absolute in a state of madness, why, how or when did it get mad? If it was ever sane, its friends ought surely to explain. Moreover, in that case must it be supposed that we have once for all superseded and abolished its primal wholeness, or does the wholeness still obtain entire behind the scenes, coexisting with our fragmentary persons, and, like another Sally Beauchamp, knowing about us all the while we know so little about it?

If the former alternative be the true one, we are back in the time-process and the mystery of a fall, reedited in these days by Messrs. Renouvier and Prat. Mr. Gore's monist puts the case in time-form, as a dramatic event, and seems to adopt this horn of the

dilemma. But another monist might consider this unorthodox, and insist that the absolute is 'timeless' and that it lives, Sally-like, alongside of our split-off selves.

But in this latter case what would be the significance of that reunion of these selves, from which, according to the absolutist philosophy, we are to hope for a cure? Is it to produce a second absolute, duplicating the first one? Or is it to be imagined as a reabsorption rather, with only the one indivisible primary absolute left? How ought we to conceive it at all? Reabsorption would seem inadmissible on absolutist principles. It would hardly go without the time-process; and would moreover be strongly suggestive of the cure of a disease *upon* the eternal absolute subject, much as an eruption may break out and be 'resolved' again upon one's skin. But the absolute can have no skin, no outside.

I doubt, therefore, whether Mr. Gore's monist has greatly helped his client's plight. Nor would it essentially mend matters for him simply to declare that the absolute is eternally three things—its pure identical self, the finite emanation or eruption and the reabsorption, all in one. And yet I believe that the path that Mr. Schiller and he have struck into is likely to prove a most important lead. The absolute is surely one of the great hypotheses of philosophy; it must be thoroughly discussed. Its advocates have usually treated it only as a logical necessity; and very bad logic, as it seems to me, have they invariably used. It is high time that the hypothesis of a world-consciousness should be discussed seriously, as we discuss any other question of fact; and that means inductively and in the light of all the natural analogies that can be brought to bear. No philosophy can ever do more than interpret the whole, which is unknown, after the analogy of some particular part which we know. So far, Fechner is the only thinker who has done any elaborate work of this kind on the world-soul question, although Royce deserves praise for having used arguments for analogy along with his logical proofs. I can not help thinking that Fechner's successors, if he ever have any, must make great use of just such cases as the one so admirably analyzed and told by Dr. Prince.¹

WILLIAM JAMES.

HARVARD UNIVERSITY.

¹ Morton Prince, 'The Dissociation of a Personality.'

REVIEWS AND ABSTRACTS OF LITERATURE

Behavior of the Lower Organisms. H. S. JENNINGS. *Columbia University Biological Series*, X. New York: The Macmillan Co. 1906. Pp. xiv + 366.

This book is eminently worthy of the excellent series to which it belongs, for it is the most detailed, accurate and complete description, analysis and interpretation of the behavior of lower organisms in existence. More than this, the work stands alone, the first representative of a class of books in which animal behavior is to receive thoroughly scientific treatment.

This review consists of two parts: an objective statement of the contents of Professor Jennings's book and a subjective criticism and evaluation of the same.

The 'behavior of the lower organisms' is divided into three parts, of which the first presents an account of the activities of unicellular organisms, the second a description of the behavior of the lower metazoa, and the third an analysis of the facts of parts one and two with a discussion of certain theories of reaction. The materials of these three parts will be described in turn.

Part I. consists of descriptions of the structure, movements, reactions to stimuli and modifications in behavior of amœba, bacteria, paramecium and other infusoria. Amœba, it is shown, responds to all stimuli which influence higher animals. Its responses, which may be classified as positive reactions, negative reactions and food reactions, are determined as to the nature and direction of movement in part by the location of the stimulus, in part by the internal conditions of the organism. Unequal stimulation of the body causes movement toward or away from the source of the stimulus, whereas a condition of general stimulation induces an irregular contraction without definite movement. Adaptive movements are attained by a process of trial not unlike that seen in higher animals. Or as the author sums up the matter: "The stimulus induces movement in various directions (as defined by internal causes). One of these directions is then selected through the fact that by subjecting the animal to new conditions, it relieves it from stimulation. This is our first example of 'selection from among the conditions produced by varied movements,'—a phenomenon playing a large part, as we shall see, in the behavior of organisms" (p. 22). The reactions of amœba are not stereotyped, but instead vary greatly in correspondence with changes in the condition of the organism as well as in external conditions. There is good evidence of the modification of behavior by experience.

Bacteria are found to exhibit one simple reaction of preeminent importance,—the reversal of the direction of movement. This occurs whenever the organism chances to swim into the region of an unfavorable condition. A stimulus causes not a definitely directed movement away from the source of stimulation as occurs in amœba and in many other

organisms, but movement in various directions until finally the stimulus is avoided. Here, as in *ameba*, success is the result of trial movements, there is 'selection from among the conditions produced by varied movements.'

Paramecium, because of its structure, swims in a spiral course. It reacts to repellent stimuli in a perfectly regular way by swimming backward, turning toward a structurally defined side, the aboral, and then swimming forward in a new direction. If the stimulus be again encountered, the same reaction is repeated. It is important to note that after swimming backward for some distance, in the stimulus-avoiding reaction, *paramecium* moves so that its anterior end swings about in a circle and thus comes in contact with conditions all around the circle. Whenever a point is reached at which the stimulus is lacking, the organism moves forward in its usual manner. Thus there is a sort of trying or testing of the environment. In addition to the progressive movements of *paramecium*, many of which may be classed as positive reactions, and the avoiding or negative reactions just mentioned, there are two other forms of reaction: local contractions of the ectosarc and discharge of trichocysts. These latter reactions are relatively unimportant for, as the author points out, the 'action system' of *paramecium* consists essentially of the swimming in a spiral course, with its features of forward movement, revolution on the long axis, and swerving toward the aboral side. Variations in the relations of a few definite simple movements result in the behavior of this organism.

Professor Jennings gives the following vividly drawn picture of the daily life activities of a *paramecium*: "An individual is swimming freely in a pool, parallel with the surface and some distance below it. No other stimulus acting, it begins to respond to the changes in distribution of its internal contents due to the fact that it is not in line with gravity. It tries various new positions until its anterior end is directed upward, and continues in that direction. It thus reaches the surface film. To this it responds by the avoiding reaction, finding a new position and swimming along near the surface of the water. Now there is a strong mechanical jar,—some one throws a stone into the water, perhaps. The *paramecium* starts back, tries certain new directions, and finishes by reacting to gravity in the reverse way from its former reaction; it now swims downward. But this soon brings it into water that is notably lacking in oxygen. To this change it responds as before, trying new conditions till it has come near the surface again. Swimming forward here, it approaches a region where the sun has been shining strongly into the pool, heating the water. The *paramecium* receives some of this heated water in the current passing from the anterior end down the oral groove. Thereupon it pauses, swings its anterior end about in a circle, and finding that the water coming from one of the directions thus tried is not heated, it proceeds forward in that direction. This course leads it perhaps into the region of a fresh plant stem which has lately been crushed and has fallen into the water. The plant juice, oozing out,

alters markedly the chemical constitution of the water. The paramecium soon receives some of this altered water in its ciliary current. Again it pauses, or if the chemical was strong, swims backward a distance. Then it again swings the anterior end around in a circle till it finds a new direction from which it receives no more of this chemical; in this direction it swims forward" etc. (p. 104).

In chapters dealing with the behavior of other infusoria important differences in the activities of members of this group of unicellular organisms are discussed. And, as paramecium is relatively unresponsive to photic stimulation, the reactions to light of stentor and euglena are described in detail. In these organisms reactions to light are caused by changes in the intensity of illumination, and the stimulus is avoided by trial of different directions of movement.

The reactions of infusoria to the electric current differ in principle from those to most other forms of stimulation in that the organism does not try different directions of movement in what appears to be a search for a certain environmental condition, but instead moves now in one way, now in another according to the strengths of action of the current upon the motor organs of different parts of the body. While admitting that it is purely a laboratory product, the author sees fit to describe and discuss the reaction to electric currents and the theories of this reaction in considerable detail.

The presentation of facts of behavior of Part I. is concluded by a chapter on the modifiability of behavior in infusoria, behavior under natural conditions and habits of feeding. Since attached forms are most favorable for the study of these aspects of behavior, stentor furnishes most of the material of the chapter. The behavior of this simple organism is not stereotyped and invariable as has been supposed by many who have discussed animal behavior without studying it, but alters from moment to moment with changes in external conditions and with those changes in internal conditions which result from experience. "The same individual does not always behave in the same way under the same external conditions, but the behavior depends upon the physiological condition of the animal. The reaction to any given stimulus is modified by the past experience of the animal, and the modifications are regulatory, not haphazard, in character. The phenomena are thus similar to those shown in the 'learning' of higher organisms, save that the modifications depend upon less complex relations and last a shorter time" (p. 179).

The mass of facts concerning the behavior of unicellular organisms presented in this part of the book proves conclusively that they, like higher animals, 'prove all things and hold fast to that which is good.'

Part II. deals with the behavior of certain of the multicellular organisms, the lower metazoa, and especially with that of the cœlenterata, the worms and the crustacea. As representatives of the cœlenterata, the behavior of the fresh-water hydra and of the medusa *gonionemus* is fully described. The action system of each of these organisms is discussed. To strong stimulation the cœlenterata respond by a contraction

which tends to remove them from the source of a harmful stimulus and to move them toward the source of a favorable stimulus. Locally acting stimuli produce more or less definitely directed movements according to the strength of the stimulus and the structure of the animal. Both hydra and *gonionemus* have a few definite simple reactions, but where these do not meet the demands of the environmental situation other forms of activity, less stereotyped in character, appear. As the author remarks after describing the rejecting reaction of sea anemones: "This whole reaction is characterized by great flexibility and variability. The *débris* sets in operation certain activities; if these do not put an end to the stimulation, other activities are induced, till one is successful. This is an excellent illustration of the general characteristics of behavior in the lower organisms" (p. 203).

In this part of the book facts are adduced in support of the statement often repeated by the author that the internal or physiological states of the organism in large measure determine behavior. In the case of the flatworm planaria, six different conditions of the organism are described, each of which has its appropriate forms of reaction. "The different physiological conditions are determined largely by the history of the individual worm, so that in this sense its behavior may be said to depend on its experience" (p. 253). This statement is true of certain of the crustacea also, for it has been shown that the behavior of crabs and crayfish is modifiable and varies with the conditions to which an individual happens to be subjected. This fact is most strikingly demonstrated in the flatworm *convoluta*, for it has been discovered that this worm migrates downward into the sand of the seashore when the tide rises and upward when the tide falls, and further, that this rhythmic change in reaction occurs even when the tidal changes do not affect the animal. In an aquarium this alternation of downward and upward movement continues for about two weeks, so the worm may be said to retain its habit of reaction for this length of time.

Comparing the behavior of the *cœlenterata* with that of the protozoa, the author writes: "We find no radical difference between the two. In the *cœlenterates* there are certain cells—the nerve cells—in which the physiological changes accompanying and conditioning behavior are specially pronounced, but this produces no essential difference in the character of the behavior itself. As in the protozoa, so here, we find behavior based largely on the process of performing continued or varied movements which subject the organism to different conditions of the environment, with selection of some and rejection of others" (p. 230).

Part III. consists of an analysis of the facts concerning the behavior of lower organisms of Parts I. and II., with a discussion of certain of the important theories of behavior and interpretations of the facts considered. In the first two parts of the book Professor Jennings has given a strictly objective account of the activities of many lower organisms; in the third part he considers the relations, origin and significance of the features of behavior which are prominent in these organisms.

There is no essential difference, we are told, between the activities of the protozoa and the metozoa; the behavior of one is no more machine-like than that of the other. Even the possession of a nervous system does not change the nature of behavior. Such are the somewhat startling statements with which this part of the book opens.

An examination of the methods of reaction in unicellular organisms indicates that they do not conform to the demands of the 'local action theory of the tropisms.' Instead of reacting to a stimulus which affects different parts of the body unequally by turning directly toward or away from the side stimulated, most of these organisms with varying degrees of thoroughness try different directions and finally select that in which the influence of the stimulus is either increased or decreased, according as the condition is favorable or unfavorable. Precise orientation, as assumed in the local action theory of the tropisms, either does not occur at all or if it does it is brought about by a process of trial and error instead of by the local action of the stimulus. Of the unicellular organisms it may be said that there is no local contraction or expansion on the side of the organism stimulated, but instead a reaction of the animal as a whole.

But the author goes even further in his attack upon the applicability of this theory of the tropisms and attempts to show that it is of little value even as an explanation of the behavior of the lower multicellular organisms. His words on this subject demand quotation. "We must then conclude from our examination of the facts that for the lower organisms taken into consideration in the present work, the local action theory of tropisms is of comparatively little value for interpreting behavior. This theory uses and attempts to make of general application certain elements here and there observable in the behavior of some organisms. But in many organisms even these elements are almost completely lacking, and in no organism that we have taken up does this theory adequately express the nature of behavior. The tropism as applied to animal behavior in the sense we have considered, is not an elementary factor; it is only a more or less artificial construction, made by combining certain elements of behavior and omitting others that are of most essential significance. It makes use of certain simple phenomena that actually exist, but elevates these into a general explanation of directed behavior, for which they are utterly inadequate. The prevalence of this local action theory of tropisms as a general explanation of behavior in lower organisms is based only on an incomplete knowledge and an insufficient analysis of the facts of behavior" (p. 274).

To the question, is the behavior of lower organisms composed of reflexes? a negative answer is given. If the reflex be defined as an act which is invariable, and this is really the only commonly used definition in objective terms that can be accepted in this connection, it is obviously impossible in the light of the facts of Parts I. and II. to maintain that the behavior of any of the unicellular organisms or of the lower multicellular organisms is made up of simple acts which may be classed

as reflex. "The behavior of paramecium and the sea urchin is reflex if the behavior of the dog and of man is reflex . . ." (p. 281). The author, therefore, concludes that the concept of the reflex act as a unit of activity, invariable and unanalyzable, comparable to the atom of physics in certain important respects, is not adequate for the description of the facts of behavior as he finds them.

In chapters on the 'analysis of behavior' the determining factors of behavior, so far as known at present, are discussed in their relations to one another and to the characteristics of the various movements made by lower organisms. These factors are internal and external. Behavior may be determined by any or all of the following five conditions: the present external stimulus; previous stimuli; previous reactions; progressive internal changes; the tendency toward the resolution of physiological states into one another. As a result of analysis "the three most significant features of behavior appear to be (1) the determination of the nature of reactions by the relation of external conditions to the internal physiological processes, and particularly the general principle that interference with these processes causes a change in behavior; (2) reaction by varied or overproduced movements, with selection from the varied conditions resulting from these movements—or, in brief, reaction by selection of overproduced movements; (3) the law of the readier resolution of physiological states after repetition. The first of these phenomena produces the regulatory character of behavior. The second and third furnish the mainsprings for the development of behavior, the second being constructive, the third conservative" (p. 312).

Behavior develops, that is, becomes more effective, more regulatory, in the opinion of the author, by reason of changes in the following directions: (1) increase in delicacy of discrimination; (2) the appearance of reactions to representative stimuli—a stimulus which has no important reaction value becomes the sign of a decidedly beneficial or harmful stimulus and calls forth the reaction which is appropriate to the latter; (3) increase in the complexity and permanency of the modifications produced in the organism by the interaction of external and internal changes; (4) the acquirement of new and more regulatory ways of reacting through selection from among varied movements. "Through the principle of the production of varied movements, and that of the resolution of one physiological state into another, anything that is possible is tried, and anything that turns out to be advantageous to the organism is held and made permanent" (p. 319). Development in accordance with these two principles at times results in the establishment of a fixed response to a certain situation in place of the series of trial movements. Such fixed responses are the reflexes, tropisms, habits and instincts of higher animals. (5) Congenital variations with respect to any of the above changes.

Supposing that the directions of change enumerated should suffice to account for the development of behavior in the individual, how is racial development to be explained? Since the inheritance of acquired characters of behavior has not been proved, this simple method of explanation

is not available, although the author admits that the problem of inheritance can not be considered as settled. Natural selection, guided by individual accommodation, serves to account for certain features of racial behavior. Does it account for all? This question the book does not answer. Instead of attempting it the author shows how natural selection might be supposed to bring about the development of behavior in the race.

Regulation in behavior results from the fact that interference with the physiological processes of the organism brings about varied movements which subject the organism to different conditions, one of which relieves the interference and thus causes the changes in behavior to cease. It is, therefore, clear that the fundamentally important principles of regulation are: (1) selection from among a series of trial movements of the one which relieves the organism of conditions which interfere with the physiological processes, and (2) the stamping in, or fixing, of the successful movement through the readier resolution of physiological states after repetition (p. 345).

Professor Jennings believes that there is no gulf between the behavior of lower organisms and the so-called psychic behavior of higher animals. For few, if any, of the objective characters of the behavior of higher animals are lacking in the behavior which forms the subject-matter of this book. "From the lowest organisms up to a man behavior is essentially regulatory in character, and what we call intelligence in higher animals is a direct outgrowth of the same laws that give behavior its regulatory character in the protozoa" (p. 335).

Concerning the existence of consciousness in lower organisms, it is the author's belief that no amount of increase in our objective knowledge can ever solve the problem for us. The problem of the existence of consciousness beyond the self is indeterminate. At the same time it is his opinion that the objective evidence is in favor of the view that consciousness is generally distributed throughout the animal kingdom. "The writer is thoroughly convinced, after a long study of the behavior of this organism, that if *amœba* were a large animal, so as to come within the every-day experience of human beings, its behavior would at once call forth the attribution to it of states of pleasure and pain, of hunger, desire, and the like, on precisely the same basis as we attribute these things to the dog" (p. 336).

To complete this objective statement concerning the contents of the behavior of the lower organisms, it should be added that the work is admirably illustrated and has a list of the especially important papers on the subject in point at the end of each chapter, as well as an extensive and valuable bibliography of works on the behavior of lower organisms at the end. There is a very complete index to facilitate reference.

Up to this point this review has been merely a statement, in the words of the author so far as possible, of important points made in the book. Were our consideration of the matter to end here nothing would have been accomplished which the author himself could not have done much better. We shall, therefore, turn now to a brief discussion and criticism of the work.

There are two results of Professor Jennings's studies which appear as the central thoughts of the book. One of these is the fact that the behavior of lower organisms is complex, variable and frequently of the trial and error sort instead of being, as has usually been supposed heretofore, simple, invariable and unmodifiable. The other fact is that the local action theory of the tropisms, which has been so extensively used to account for the reactions of lower organisms, does not agree with the facts of behavior in most of the unicellular organisms and in many of the lower multicellular animals, for instead of orienting directly and precisely with reference to a given stimulus by reason of the local action of the stimulus, they usually exhibit a series of trial movements which are the result of the activity of the organism as a whole. The importance of these two general conclusions of the book has not been over-emphasized by the author, although he has built his entire work about them and has used all his materials of fact to justify them.

It can not be said that the investigations which have led to these conclusions were entered upon with a prejudice in favor of them, for when the author began his work on the 'Reactions to Stimuli in Unicellular Organisms,' just ten years ago, he laid stress upon the possibility of reducing the seemingly complex activities to simple and relatively uniform acts and used terms in the description of the reactions of the organisms which justify the inference that he believed in the satisfactoriness of the local action theory of the tropisms. But during the ten years between the beginning of his researches and the writing of the 'Behavior of the Lower Organisms,' the accumulation of facts has led to a gradual change in the author's opinion on these matters. To-day he strongly opposes the view that behavior is composed of invariable reflexes which are often determined by the local action of a stimulus.

With reference to the two chief points of the book, the following criticism may be offered. Too little emphasis is given the fact that in many cases what appears to the observer to be a series of trial movements is really the repetition of a certain act. The external effect of the repetition is not precisely the same each time, for the organism is constantly being brought into new relations to its environment. One can not help asking, after all is there not some fundamental difference between the so-called trial movements of unicellular organisms and the trial and error behavior of higher animals?

It is by no means clear that the local action of a stimulus may not give origin to a series of movements which have all the characteristics of trial movements. Orientation to a stimulus, even by local action, is not in all cases precise; the organism moves too far and has to change the direction of motion, or, perhaps because of a conflict of stimuli, it starts to move in the wrong direction. It may well be asked whether the author's opposition to the local action of stimuli may not lead inexperienced investigators to think that all reactions are of the trial and error type. Possibly it would have been better had certain instances of reaction without trial been given greater prominence. Professor Jen-

nings has not disproved the existence of local action: he has shown that the behavior of many of the lower organisms in certain instances need not, and in other cases can not, be explained on the ground of such action. It remains for some one to determine whether a stimulus ever brings about a movement by local action instead of by changing the condition of the entire organism.

Unfortunately, the author has not dealt rigorously and in an original manner with the concept of reflex action. The definition which he accepts for purposes of description—an invariable reaction to a stimulus—is obviously unsatisfactory, for if one thing is plain it is that no organic reaction is invariable. Had he either formulated a definition in terms of the results of his investigations or simply said there is no such thing as reflex action as commonly conceived and then proceeded with his careful analysis of behavior, there would have been greater gain. The upshot of the whole matter is that Professor Jennings has no unit of action and apparently is not very hopeful of finding one. He has shown that those acts which are commonly called reflex are far from being simple, in many cases, and are never invariable. The question remains, is there a simple, unanalyzable organic process which may be used for descriptive purposes as a unit of action?

By his researches Professor Jennings has made himself the authority on the behavior of unicellular organisms. His book is admirable with respect to material, method of presentation and form. Its present importance can be fairly judged only when one realizes that it undermines the prevalent conception of the nature of the behavior of lower organisms and narrows to a fraction of its present reach the applicability of the most influential theory of the reactions of lower organisms that has ever been proposed. Its future influence will certainly be tremendous, for it is a work which will determine the direction of research as well as mould popular and scientific opinion. It is the most important book on animal behavior that has ever been written.

ROBERT M. YERKES.

HARVARD UNIVERSITY.

The Psychological Principles of Education. HERMAN HARRELL HORNE, Ph.D. New York: The Macmillan Company. 1906. Pp. xiii + 435.

Considering the present stage of psychological science, Professor Horne has essayed a hazardous task. Though not seeking to contribute to pure psychology nor to special educational methods, he does attempt to deduce practical applications and to criticize educational errors by what he conceives to be ascertained and verifiable laws of mind.

There are five main divisions of the book, the thirty-four chapters, however, being numbered consecutively. Part I. is concerned with the general presuppositions of the science of education, being a revision of his discussion of this topic at the World's Congress of Arts and Sciences at St. Louis. The author pleads for a recognition of education as a science, while admitting that it is primarily an art. Accepting history

as a science, by analogy education should be. Contrary to Professor Royce, 'universal validity' is not an 'inalienable characteristic of science.' A 'relative,' not an 'absolute pedagogy,' with a growing, not a static ideal, is indeed a normative science, more and more accumulating a 'body of growing knowledge, classified and verifiable.' Thorndike's work is cited as an example of the advancement and rigor in application of exact scientific methods to the problems exclusively educational. Results at present are meager, methods must be perfected and limitations more strictly defined. The pace has been set, however.

In the body of the book one finds a series of attempts to illustrate the desirability and the practicability of 'this transformation of psychological science into pedagogical art.' In the past egregious errors, such as the extravagant insistence upon formal discipline, the undue stress upon memory, etc., were due to the mistaken faculty school of psychologists. Functional and genetic psychology now emphasize safer and more desirable ways of treating the most clearly revealed stages in mental development and organization. Further, emphasis is laid on the necessity of prime consideration for the teachers, *viz.*, that they should appreciate the needs of the growing, even more than of the grown, mind. Thus paving the way, the author in the remainder of the book (Parts II., III., IV. and V.) concerns himself with specific illustrations of how consciously the teacher should use his psychological laws in the actual intercourse of school life, prefacing his specific work with a closing chapter in Part I., in which the theory of formal discipline serves to illustrate how illuminating comprehensive psychological attitude and analysis can be not only in detecting, but in efficiently correcting educational extremes in matters of emphasis.

Part II. treats of intellectual education. In substance, we as teachers have laid undue stress upon certain sensory material, auditory once, visual at another period, and have never quite sufficiently sought for the attainment of the harmonious functioning of our whole sensory apparatus. Seeking also chiefly what contributes primarily to intellectual clarity, certain other sense organs which furnish us chiefly with esthetic material we have complacently neglected. The author goes to the extreme of urging that a definite effort be directed to the rehabilitating of our rudimentary olfactory sense. It is interesting here to compare his position with that of another prominent educational psychologist. Bagley, in his 'Educative Process' (page 52), deplors the very attitude voiced by the above writer. "The harmonious development aim has taken another erratic turn in giving undue prominence to 'sense training,' especially as applied to the lower senses. . . ." "Now the sense of smell has been atrophied in man for a very good reason. . . ."

The other chapters in Part II. deal with the nature, and the principles of application deduced therefrom, of perception, apperception, memory, imagination, conception, judgment and reasoning. Fads are attacked, errors due to faulty psychological concepts are exposed, and suggestions of conditions for the teacher's equipment and for the pupil's appreciative understanding are carefully enumerated and psychologically justified.

Part III. is concerned exclusively with what pertains to the principles of 'educating the mind to feel.' The striking thing in this chapter is the contention that the training of the feelings should be the conscious, definite aim of the teacher, and that our affective experience is also amenable to methodical exercise. This, however, constitutes the chief value of the treatment for the psychologists as such. The details of the discussion here reveal the author's ethical rather than his psychological acumen. His description, classification and partially adverse criticism of modern theories of feeling are not exhaustive nor do they constitute a satisfactory résumé of the even now 'darkest chapter in psychology.' The concluding chapter on 'Esthetic Education' is naturally nearer to modern psychological issues. His practical suggestions are good and timely.

Part IV. deals with the function, importance, nature and development of the will. Using will in the broad sense, the author includes spontaneous, reflex, instinctive, impulsive, imitative, suggested, habitual and attentive or chosen action as serviceable types, all but the two first named falling under the influence of the educator, and all likewise amenable to a psychological plan of development. Using James's types of wills, the writer claims that our modern kindergarten is adapted to the development of the 'obstructed,' but fashioned so as to be actually detrimental to the equally common type of 'precipitate' will. This, however, is but a sample of the many short-sighted educational policies, cited continually throughout the book, adopted unadvisedly by our educational system builders, whose point of view is limited by their correspondingly limited psychological horizon. There follows a decidedly interesting ethical discussion. The concluding topic of Part IV. deals with attention. A teacher with sufficient psychological erudition and insight will not exclusively follow the child's unguided interest, nor unreservedly call for effort, two marked extremes from the one to the other of which, again from lack of psychological balance, the educational pendulum still continues to swing.

Part V., the concluding division of the book, deals with the problem of the religious consciousness, and the legitimate and practical means for its development. The psychology of religion has also its message for the educator. James, Starbuck, Leuba, Höffding, Hall, Coe, Martineau and many others are drawn upon, with the purpose in view of showing, from the organic nature of self, and from the teachings of genetic psychology, the logical and natural last step of consciously directed educational effort. This from scientific grounds must be incorporated into our educational ideals. Without this specific recognition, based on psychological as well as on ethical and religious assurance, the efforts of education are but makeshifts, futile as tested by the only norm our developed national consciousness should recognize. Religion, in other words, is not 'an artificial graft into human nature,' nor is it merely the 'safe passing of an adolescent crisis.'

A criticism from a strictly psychological point of view is hardly ap-

plicable, since the author disavows any intention of contributing to the science. However, the psychologist is naturally interested also in what can be successfully taken over into practise from his chosen field of investigation and experimentation; and it is true also that many look askant at such endeavors as premature and as relying upon questionable speculation rather than upon approved and established fact.

Again the necessity of rather dogmatic and brief summaries and definitions of mental processes tends often to show haste and lack of scientific exactness in their formulation. For an example of this, on pages 166-7 we read: "A sensation is a response of intelligence to stimulation; perception is the repeated response of intelligence to sensation; conception is the response of intelligence to repeated perception; memory and the reproductive imagination are the response of intelligence to its past; and the productive imagination is the response of intelligence to the future or to ideal values." Besides the failure here adequately to represent the immense complexity of the processes referred to, the account may be construed as even misleading. It would be profitable here again for the student of the book to compare the above cited paragraph with the description given by W. McDougall of the same processes, in his excellent little book, 'Physiological Psychology.' Every phrase of the above would be essentially modified. To quote once more, such statements as we find on page 195, "The nerve-centers that correspond to feelings develop earlier than those that correspond to rational thought and deliberate action, . . ." and on page 259, "The roots of will are very much lower down in the nervous system of man than we ordinarily suppose," might lead the trusting reader, uninitiated into the unsettled state of present neurological inquiry into the functions of higher and lower centers, to conclude that our knowledge is much further advanced than actually is the case.

Notwithstanding these and other similar criticisms that might be offered, the author's purpose as outlined in his preface is never compromised. If his title is not taken too literally, if the reader is willing to admit the inclusion of ethical and religious considerations, not to be too insistent that the treatment indicate one consistent attitude, the book is likely to prove profitable and entertaining. Educational factors are varied and widely dispersed, poorly organized, wrongly directed, and some of them often entirely overlooked. This the author sees, and for this he seeks the principles of correction, wherever they seem most likely to be found. He has stressed the importance of the science of psychology, but quite frankly states as another prefatory remark that valuable contributions are looked for from the other sciences as well, though not perhaps in the same proportion.

CHARLES HUGHES JOHNSTON.

DARTMOUTH COLLEGE.

JOURNALS AND NEW BOOKS

- REVUE PHILOSOPHIQUE. October, 1906. *Les conditions biologiques du remords* (pp. 337-358): G. DUMAS. - Abnormal cases of remorse show that the emotion is present in patients who have lost normal feelings and ambitions, and who yet belong to the active type of melancholics. The instincts leading to the act remorsefully viewed have perished, at least temporarily, and the act is judged in abstraction from its impulse. There is a physiological disturbance giving a conscious depression which attaches to an intellectual content. Removal of the depression removes the remorse; one grain injection of caffeine accomplished this in one case recorded. *L'échange économique et l'échange affectif* (pp. 359-399): F. PAULHAN. - The basic difference between economic and sentimental exchange is that the former is definite while the latter is indefinite. In the latter there is no specific quantity of demanded and supplied goods, but merely a demanded and supplied attitude. The sentimental exchange is a relatively permanent contract, whereas the economic one is occasional. Affections have economic value, but this is hard to fix. Every economic exchange involves some affective relation between the parties. Affective exchange tends to become definite; as soon as it becomes so it is only a special form of economic exchange. *L'a priori dans la science* (pp. 400-411): W. M. KOZŁOWSKI. - The problem of science is (a) to decide between appearance and reality, and (b) to discover the nature and origin of scientific theory itself. Mach's theory of the accidental, purely historical nature of modern scientific hypotheses is wrong because it assumes that the mind is a *tabula rasa*. But the scientist, like the ordinary man, has a psychological equipment prior to all theoretical thinking. So in science we have two species of *a priori*; the historical and the psychological. Scientific antinomies are between qualitative (perceptual) and quantitative (rational) aspects of reality. Tables of these antinomies and their solutions are given. *Revue critique*: Rignano, *Sur la transmissibilité des caractères acquis*: LE DANTEC. Lacombe, *La psychologie des individus et des sociétés chez Taine*: PAULHAN. *Analyses et comptes rendus*: Jerusalem, *Der kritische Idealismus und die reine Logik*: LUQUET. Dugas, *Cours de morale théorique et pratique*: M. X. Goldscheid, *Grundlinien zu einer Kritik der Willenskraft*: SEGOND. Caviglione, *Il rimorso*: SEGOND. Cimbali, *La città terrena*: SEGOND. Gerland, *Immanuel Kant, seine geographischen und anthropologischen Arbeiten*: SEGOND. Immanuel Kant, *Grundlegung zur Metaphysik der Sitten*: SEGOND. Falter, *Beiträge zur Geschichte der Idee*: IIUIT. *Revue des périodiques étrangers*.
- Croce, Benedetto. *Aesthetik als Wissenschaft des Ausdrucks und allgemeine Linguistik*. Theorie und Geschichte. Nach der zweiten durchgesehenen Auflage aus dem Italienischen übersetzt von Karl Federn. Leipzig: Verlag von E. A. Seeman. 1905. Pp. xiv + 494.

- Johnson, Edith Henry. *The Argument of Aristotle's Metaphysics*. New York: Lemecke & Buechner, Agents. 1906. Pp. 186.
- Ribot, Th. *Essai sur les passions*. Paris: Félix Alcan. 1906. Pp. vii + 102. 3 fr. 75.
- Talbot, Ellen Bliss. *The Fundamental Principle of Fichte's Philosophy*. Cornell Studies in Philosophy, No. 7. New York and London: The Macmillan Co. 1906. Pp. vi + 140. \$1.00 net.
- Zschimmer, Eberhard. *Eine Untersuchung über Raum, Zeit und Begriffe vom Standpunkt des Positivismus*. Leipzig: Wilhelm Engelmann. 1906. Pp. 54. 1s. 6d. net.

NOTES AND NEWS

CHARLES A. OLIVER, A.M., M.D., contributes in the *New York Medical Journal* of November 10 a study of the 'nativity, sex and age, occupation and social condition of three thousand four hundred and thirty-six cases of senile cataract operated upon at the Wills Hospital in Philadelphia.' The operations were performed by the various members of the attending staff and covered a period of thirty-five years. The cases employed were limited so far as possible to those in which the 'usual clinical appearances of so-called senile cataract were not complicated by any other demonstrable expressions of cause and effect than those which are significant of the gradual retrograde changes denominated by senility.' The following is an extract from the statistics given: "*Nativity*: It has been found that there were fifteen hundred and thirty-five foreign-born cases and nineteen hundred and one native-born ones. Of the foreign-born groupings, Ireland furnished the greatest number throughout the three and a half decades; actually rising to some fifty-five per cent. This was closely followed by Germany with thirty and some per cent., England with ten per cent. and Wales and Scotland with three and two per cent., respectively. Among the native-born, Pennsylvania, with its preponderant sixty-five per cent., naturally gave a long lead, followed by fifteen per cent. for New Jersey, ten per cent. for Delaware and five per cent. each for Maryland and New York. *Sex and age*: With the native-born male American there existed the highest average age for operation, and hence most probably that of maturity of his cataract. During the first decade it was 64.5 years, increasing one tenth to 64.6 years for the second decade and rising another tenth (64.7 years) in the third decade—until in the first half of the last decade (to date) it has arisen to the remarkable average of 67.6 years. The Irish male, commencing at 61.7 years, falling two tenths (61.5 years) in the second decade, and rising four tenths (61.9 years) in the third, showed a final increase of six tenths (62.5 years) in the last half decade. The male German, beginning lower, at 60.6 years, gave a rise to 60.9 years in the second decade, with a sudden jump to 64 years in the third—to which he finally added eight tenths of a year

(64.8 years). The Englishman and the Scotchman at 60 years and 59 years each, rose to 63.5 years and 60 years, with a rise of the former to 65.3 years and a fall of the latter to 58 years—to at last give the phenomenal jumps of 70 years and 71 years respectively. Among seven hundred and thirty native-born women, forming about fifty per cent. of the total of fourteen hundred and fifty-two female cases in the series, it was found that the average operation age during the first decade was 63.1 years, increasing in the second decade to 65.4 years, and decreasing in the third decade to 64.3 years; ultimately rising in the last five years to 63.8 years; thus giving an increase of seven tenths of a year as the general average. The Irish female ratio increased regularly through the four decades from 60 years to 60.8 years, to 62.1 years, and to 63.2 years as the final average; a very marked gain in the proportion. The German female, commencing with 62 years, fell to 60.8 years in the second decade, to rise to 63.9 years in the third, and to give an enormous leap to 68.5 years as the average for the last half decade; a most remarkable betterment. The English woman and the Scotch woman, commencing at 62 years and 64 years, respectively, suddenly rose to 64 years and 73 years each, to again fall very low, 62 years and 60 years each, but ultimately to reach 63.2 years as the final for the former, with a remarkable jump to 73 years as the final for the latter. *Occupation:* It was soon realized that as occupation among the male subjects played such an important part in regard to the maturity and even causation of the cataractous condition, it was necessary to divide the patients' vocations into four classes: (a) the unskilled laborer, (b) the skilled workman, (c) the high-grade artisan, (d) the brain-worker. The first great class, (a), composed principally of out-of-door laborers, although by far the greatest in number, gave the highest operative age average, sixty-six years, throughout the entire three and a half decades; the average practically remaining the same. The second class, (b), made up of blacksmiths, glass blowers and other workers in superheated materials, gave by far the lowest age for the operative procedure, fifty-eight years. The third class, (c), composed of those in such employment as book binders, compositors, edge-tool makers, engravers, jewelers, shoemakers (particularly) and tailors, showed the lenticular condition fit for removal at an average age of sixty-three years. The fourth class, (d), most probably by reason of better hygiene, etc., gave a very high operative age, sixty-five years, as the average."

THE following appointments have been made in the department of philosophy in the University of Michigan: Mr. Roy W. Sellars, A.B. (Michigan), some time fellow of the University of Wisconsin, instructor, and Mr. Frank van Vliet and Mr. L. W. Elder George S. Morris memorial fellows.

DR. FREDERICK TRACY has been promoted to an associate professorship in the department of philosophy in the University of Toronto, and Dr. T. R. Robinson and Mr. W. G. Smith have been added as lecturers to the staff of the department.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

A DEFINITION OF EXPERIMENTATION

THE question of the meaning of experimentation is brought repeatedly before us, if we read any criticisms of method by the scientific investigators themselves, or, indeed, if we stop to consider the reason for the terms and subdivisions of the different sciences and to ask why experiment plays so large a part in some and is so little used in others. Such phrases as 'the treacherous path of speculation instead of the safe way of observation and experiment'¹ or as 'those experimental investigations upon which the growth of science depends,'² and the sad note in the statements made by a distinguished geologist that 'there has been during the last few years a large accumulation of geological evidence, a little new speculation, but practically no new experimental work,'³ and that geology is 'only beginning to enter the experimental stage';⁴—these, and the many other similar references to be met with, all suggest that for some reason the ideal of science is to build on experiment primarily if not entirely.

When we ask what experimentation is or what an experiment is, and much more when we ask how it is that experiment achieves its result, the answers are not so easy to find as we might hope, particularly if we turn for them to the scientific investigators themselves. Experimentation and observation together make up our means of appeal to the external world. That is clear. They connect us in some way with the phenomena there, make us master in part of that world of fact that yet we never feel as within our control. What, however, is the distinction between the two, how are we to tell an experiment from an observation? Dr. L. F. Barker, of Johns Hopkins University, stated in his address before the Massachusetts Medical Society in June, 1905, that their difference was one of relative exactness. In the report of another physician, we have again

¹ Carl Schorlemmer, 'Rise and Development of Organic Chemistry,' p. 4.

² Thomas H. Huxley, 'Collected Essays,' Vol. I., p. 55.

³ *Nature*, August 24, 1905, p. 408.

⁴ *Ibid.*, p. 413.

the phrase 'exact experimental evidence.'⁵ But Lord Kelvin seems to refer to something different from exactness in saying 'their eyes to observe accurately and their hands to experiment, in order to learn more than can be learned by mere observation.'⁶ Experiment to him promises new rather than merely more exact knowledge. Pasteur's statement that experimentation 'demands besides certain natural qualities a long practise which naturalists have not generally acquired nowadays'⁷ is rather non-committal, but certainly does not give exactness as the unique achievement of the experiment. Huxley is satisfied to call it 'observation under artificial conditions,'⁸ which is perhaps something like what Titchener means in defining experiment as 'simply an observation made under standard conditions,'⁹ but it is certainly not a mere repetition of the demands either for measure and exactness or for the use of one's hands. We have, finally, Mill's well-known statement that "we may either find an instance in nature suited to our purposes, or, by an artificial arrangement of circumstances, make one. There is, in short, no difference in kind, no real distinction between the two processes of investigation (observation and experiment). There are, however, practical distinctions."¹⁰

The demand for a clear understanding of the word experiment in the physical sciences is made stronger when we remember that its use is not confined to those. The mathematician and logician insist that they, too, experiment when, for instance, they try number after number as the root of a given equation or develop the result of one after another of all imaginable combinations of postulates in the search for a new one that is useful and significant.

The suggestions at definition are purposely taken from a rather wide range of time and fields of investigation. The fact that they are not in obvious agreement does not surely mean that their authors held ideas of the proper use of the word experiment which were fundamentally different. It is possible that an investigator in a given field might take a characteristic of the result that could be gained only through experiment there as an invariable and necessary characteristic of experimentation in all fields. In the hope of bringing to light a common idea at the basis of all these special meanings for experiment, I have attempted to classify the methods of scientific investigation in such wise that experimentation should be exemplified

⁵ J. J. Kilyoun, 'Bacterial Content of Railroad Coaches,' July, 1905.

⁶ Lord Kelvin, 'Popular Lectures and Addresses,' Vol. II., p. 478.

⁷ René Vallery-Radot, 'Life and Works of Pasteur,' translated by Lady Claud Hamilton, Vol. I., pp. 125-6.

⁸ *Loc. cit.*, p. 66.

⁹ E. B. Titchener, 'Primer of Psychology,' p. 26.

¹⁰ J. S. Mill, 'A System of Logic,' Vol. III., Chap. VII., § 2.

in all the examples falling under one heading of my classification and in that way be contrasted with the methods belonging to the other headings. I use the term *experimentation* rather than *experiment* designedly because a new question enters if we ask how the single experiment is distinguished from the group of experiments or phase of an experiment.

The classification I finally adopted is the following. The comments which follow the classification may perhaps make its underlying principles clearer. It will be seen at once, however, that the different classes are not mutually exclusive, that is, the examples are chosen only because each calls for the unique element of method which that heading names. Application of any one of these methods would usually involve the use of some other as well.

A classification of methods used in the physical sciences in gaining data from experience with the natural world:

A. Observation of the outside.—The investigator does not consciously and voluntarily interfere with the phenomena he studies. I. Simple observation. The investigator merely observes as does the 'every-day' man. II. Complex observation. The investigator supplements the range of his sense organs. Examples: use of microscope, telescope, stethoscope, X-ray machine; dragging the bottoms of lakes and oceans; bringing a compass near a magnet; spreading sand over a membrane to observe a faint sound vibration. III. Measure. The investigator supplements his powers of accurate comparison. Examples: measurement of length, time, strength of sound by modified stethoscope; counts of number of bodies of different sorts in a drop of blood; counts of number of stars in a given region of the sky. IV. Transference (in position and by copymaking). The investigator supplements the accuracy of his memory or serves his greater convenience. Examples: moving specimens into the light; making photographs; making accurate drawings; staking out the outline of bands that precede the eclipse of the sun; use of the needle and smoke drum; use of preservatives for specimens.

B. Observation of the inside.—The investigator consciously and voluntarily isolates certain aspects of phenomena from their natural surroundings on the assumption that he keeps those aspects essentially complete and undisturbed. I. Material classification. The investigator isolates certain portions of a total experience, with the hands. Example: dissections. II. Mental dissections. The investigator isolates certain aspects of a total experience. *a.* Record-taking. By confining his attention to a portion of the qualities or conditions present. Examples: medical records; geologists' notes as to the fauna and flora present in a given country. *b.* Diagram-making. By confining his attention to some of the relations pre-

sented. Example: diagrammatic drawings of structure made by the anatomist, the zoologist, the crystallogist.

C. *Experimentation*.—The investigator consciously and voluntarily alters the conditions of the phenomena studied.

According to this classification the distinction to be made between observation, on the one hand, and experimentation, on the other, is, as Mill says, not one 'in kind,' but a 'practical' distinction only.

A good typical instance of experimentation of least complexity is found in the case of Pasteur's experiment upon the condition of air in different places.¹¹ He arranged a number of sealed flasks containing some substance in which bacteria thrive. These he opened in turn to the air at different points, some in the low country and some high among the snow peaks of the Alps. He afterwards examined the contents to discover at which spots, if any, the air which had entered the flasks had not brought with it bacteria. Such a set of processes is an experiment, because the conditions which the substance within the bottles met were made distinctly artificial. Pasteur did not find substances isolated, exposed to the atmosphere at a single given spot and then isolated again. True, he himself did not touch the contents of the bottles directly in altering their conditions, but yet he did so indirectly by removing and replacing their seals. Experimentation in many cases calls, of course, for much more elaborate apparatus.

Such processes are to be contrasted with the two kinds of observation. First, with those methods which, however elaborate, are used with the intention merely of getting a better view of the object. So far as that particular object is concerned we might imagine here that the investigator's hands are tied behind his back. Besides the careful watching needed as an element in all investigation this class includes the use of various magnifying and measuring instruments and similar contrivances, and as well different forms of copying, I think. All photographs do not stand on the same basis here. For the geologist they serve as illustrations for communication and thus are not a part of the methods of science, but rather of its means of promulgation. The photographs of the astronomer, however, are taken not that he may show some one else what he has seen, but that he may himself compare the condition of a part of the heavens on one night with its condition on another, and that he may make measures to determine the size of the stars and their relative positions at his leisure and in a convenient manner. He uses the photographs and gains more from them than he could have gained, at least with the same amount of effort, from direct observation.

The name of the group representing the second form of observa-

¹¹ *Loc. cit.*, pp. 127-8.

tion would be dissection but that, as a pathologist suggested to me, many dissections are performed with the avowed purpose of creating specific artificial conditions in the subject examined. With vivisections, for instance, this is generally true. 'Material classification' was suggested by Dr. Royce as following Kemp's assertion that the essence of classification is the marking a group of things off from others unlike them, rather than the binding of like objects together. There we have the motive of this second kind of observation at work. In order to study them more closely we separate the heart and lungs of a rabbit, for instance, from their natural surroundings.

By the records referred to something is meant other than the descriptions used continually in communicating results. When the physician records he notes only certain aspects (such as temperature, pulse, etc.) which he considers significant, and entirely ignores other aspects of the patient (such as complexion and height, perhaps), assuming that they have no bearing on the nature and cause of the disease. As a result he gives us only, as it were, a skeleton, or perhaps the breath or the heart of a man, with no suggestion as to how these scraps are to be filled out to reproduce the original he studied. In the descriptions made purely for the sake of communication details are often omitted, but there they are left unstated either because, as perhaps with colors, they are implied in the names of the trees and the rocks given or because the writer himself has forgotten them. In making records the investigator is conscious that what he gives can not be found by itself, just as a nerve can not be found except it be taken from an animal body. In his record he isolates aspects of the situation before him from the other conditions that invariably accompany them, and believes that none of the relations annulled by such isolation have any influence upon the aspects he does report.

The classification may be objected to as a whole on the ground that these classes which I have distinguished from each other are not really distinct, so that many true cases can be produced as evidence of its insufficiency. In what I call simple observation, for instance, the mere fact that our attention is centered upon one part of the field rather than another alters the aspect of that field somewhat. We can not be sure in any given instance that we do not interfere with the object we study. It is true, also, that no one who has read of the weeks of drill and the great precautions taken against jar and dust at the time of making observations of the eclipse of the sun in August, 1905,¹² or of the care with which an astronomer must adjust his telescope and ward against imperfections in its action¹³ can feel

¹² *Nature*, September 7, 1905. Letter by W. J. L. Lockyer.

¹³ Cf. 'Annals of the Astronomical Observatory of Harvard College,' Vol. XXVI., Pt. I.; Vol. XVIII., No. VII.

sented. Example: diagrammatic drawings of structure made by the anatomist, the zoologist, the crystallogist.

C. *Experimentation*.—The investigator consciously and voluntarily alters the conditions of the phenomena studied.

According to this classification the distinction to be made between observation, on the one hand, and experimentation, on the other, is, as Mill says, not one 'in kind,' but a 'practical' distinction only.

A good typical instance of experimentation of least complexity is found in the case of Pasteur's experiment upon the condition of air in different places.¹¹ He arranged a number of sealed flasks containing some substance in which bacteria thrive. These he opened in turn to the air at different points, some in the low country and some high among the snow peaks of the Alps. He afterwards examined the contents to discover at which spots, if any, the air which had entered the flasks had not brought with it bacteria. Such a set of processes is an experiment, because the conditions which the substance within the bottles met were made distinctly artificial. Pasteur did not find substances isolated, exposed to the atmosphere at a single given spot and then isolated again. True, he himself did not touch the contents of the bottles directly in altering their conditions, but yet he did so indirectly by removing and replacing their seals. Experimentation in many cases calls, of course, for much more elaborate apparatus.

Such processes are to be contrasted with the two kinds of observation. First, with those methods which, however elaborate, are used with the intention merely of getting a better view of the object. So far as that particular object is concerned we might imagine here that the investigator's hands are tied behind his back. Besides the careful watching needed as an element in all investigation this class includes the use of various magnifying and measuring instruments and similar contrivances, and as well different forms of copying, I think. All photographs do not stand on the same basis here. For the geologist they serve as illustrations for communication and thus are not a part of the methods of science, but rather of its means of promulgation. The photographs of the astronomer, however, are taken not that he may show some one else what he has seen, but that he may himself compare the condition of a part of the heavens on one night with its condition on another, and that he may make measures to determine the size of the stars and their relative positions at his leisure and in a convenient manner. He uses the photographs and gains more from them than he could have gained, at least with the same amount of effort, from direct observation.

The name of the group representing the second form of observa-

¹¹ *Loc. cit.*, pp. 127-8.

tion would be dissection but that, as a pathologist suggested to me, many dissections are performed with the avowed purpose of creating specific artificial conditions in the subject examined. With vivisections, for instance, this is generally true. 'Material classification' was suggested by Dr. Royce as following Kemp's assertion that the essence of classification is the marking a group of things off from others unlike them, rather than the binding of like objects together. There we have the motive of this second kind of observation at work. In order to study them more closely we separate the heart and lungs of a rabbit, for instance, from their natural surroundings.

By the records referred to something is meant other than the descriptions used continually in communicating results. When the physician records he notes only certain aspects (such as temperature, pulse, etc.) which he considers significant, and entirely ignores other aspects of the patient (such as complexion and height, perhaps), assuming that they have no bearing on the nature and cause of the disease. As a result he gives us only, as it were, a skeleton, or perhaps the breath or the heart of a man, with no suggestion as to how these scraps are to be filled out to reproduce the original he studied. In the descriptions made purely for the sake of communication details are often omitted, but there they are left unstated either because, as perhaps with colors, they are implied in the names of the trees and the rocks given or because the writer himself has forgotten them. In making records the investigator is conscious that what he gives can not be found by itself, just as a nerve can not be found except it be taken from an animal body. In his record he isolates aspects of the situation before him from the other conditions that invariably accompany them, and believes that none of the relations annulled by such isolation have any influence upon the aspects he does report.

The classification may be objected to as a whole on the ground that these classes which I have distinguished from each other are not really distinct, so that many true cases can be produced as evidence of its insufficiency. In what I call simple observation, for instance, the mere fact that our attention is centered upon one part of the field rather than another alters the aspect of that field somewhat. We can not be sure in any given instance that we do not interfere with the object we study. It is true, also, that no one who has read of the weeks of drill and the great precautions taken against jar and dust at the time of making observations of the eclipse of the sun in August, 1905,¹² or of the care with which an astronomer must adjust his telescope and ward against imperfections in its action¹³ can feel

¹² *Nature*, September 7, 1905. Letter by W. J. L. Lockyer.

¹³ Cf. 'Annals of the Astronomical Observatory of Harvard College,' Vol. XXVI., Pt. I.; Vol. XVIII., No. VII.

that the scientist finds it an easy matter to be sure that he perceives the phenomenon exactly as it is, by means of his reenforced sense organs. Measures, too, must be made with great care, often with the aid of microscopes, and must be revised as new and more accurate instruments are invented. It would seem to take fully as much effort and thought and preparation to guard against interfering with the natural course of phenomena as to plan just how one should interfere. We must, as it were, greatly interfere with our own natural course of action in order to guard against intruding ourselves upon the object we observe. The same thing is, of course, to be said, perhaps with more force, in the case of all dissections. In isolating the specimen we have the greatest difficulty in keeping it intact. For these reasons the subjective qualification is introduced into my definition, the qualification that the interference must be conscious and voluntary. Whenever the investigator believes that he has not interfered, he observes.

The line cases and the complex cases which can be pointed out are many; so, too, are the perplexing cases that can be classified only after a more careful examination. The large number of line cases suggests, what I must readily admit to be true, that their proper name is borderland cases,—that the division between the classes is made by a stretch of neutral territory rather than by a definite narrow fence.

We have, for instance, an investigation which Lord Kelvin describes that offers some difficulty.¹⁴ In this the experimenter placed his head between the poles of a horseshoe magnet to determine whether he would become thus directly aware of the condition which made a piece of copper slip through the space 'as if through mud.' The pure observer goes to a selected spot to watch the action there. The operation in this instance could be so described. The investigator put his head in a certain spot in the hope that he might observe the conditions there. What this investigator wishes, however, is to learn the effect of certain conditions upon his nerves (or muscles, perhaps) other than those of the senses which are properly called into play in simple observation. He plays a double part, as it were. He puts himself in the particular spot more that he may, if possible, become affected by the conditions there than that he may watch the play of those conditions among themselves as the geologist watches the eruption of a volcano. Thus this would seem to me to be an example of experimentation.

For a different reason the case in which Malus held the crystal up to observe its effect upon reflected light is perplexing.¹⁵ He

¹⁴ *Loc. cit.*, pp. 127-8.

¹⁵ 'Life and Works of Pasteur,' as given, Vol. I., p. 345.

altered the place of the crystal and so brought light to play upon it. When the zoologist pulls his subject into a better light as he dissects it, or reflects light upon a microscope slide, we should not say that he thereby experiments upon it. Malus placed his crystal in the light and looked through it, much, it would seem, as one looks through a microscope. That he might have chanced to lay it on a window in such a way that the same effect was produced, and might then have observed the effect, does not, it is true, bear on our point because in such chance action the change of condition would not have been both consciously and voluntarily brought about. But that he merely consciously and voluntarily changed its relation to light seems hardly enough to warrant calling the operation experimentation. The fact that the light was known to be reflected and not direct sunlight, however, and the fact that crystals and light react on each other in a manner not true in regard to animal bodies and light, introduce a sufficient element of really changed conditions to make it seem best to me to class this as on the borderland between experimentation and simple observation.

We have also to consider the references made by Wüllner in his section on acoustics¹⁶ to general experience with musical instruments as to the effect of different sorts of bows, bridges and hammers upon the nature of sound. Musical instruments were by no means made for the purpose of testing the principles of acoustics. It is entirely immaterial to the experimenter whether he produces the sound or whether he chances to note it during the performance of a concert. Yet the instruments themselves are very carefully and very artificially constructed, and serve the purposes of science so exactly that if they had not been manufactured for the purposes of the musician the scientific investigator would have perforce constructed something very similar, for himself. These operations again seem to lie in a stretch of neutral territory between simple observation and experimentation.

These few examples have indicated that the different classes of the forms of observation do not represent stepping-stones from simple observation to experimentation, as those would suggest who insist that the essential of experimentation is complexity of apparatus. We can find examples that are in a neutral field between practically each kind of observation and experimentation itself. The only necessity for experimentation is conscious and voluntary interference with the object studied. This may be made directly with our own hands or may be accomplished by means of apparatus of various kinds.

The claim which such a definition makes for general acceptance

¹⁶ A. Wüllner, 'Experimental-Physik,' Vol. I., pp. 874-5.

sented. Example: diagrammatic drawings of structure made by the anatomist, the zoologist, the crystallogist.

C. *Experimentation*.—The investigator consciously and voluntarily alters the conditions of the phenomena studied.

According to this classification the distinction to be made between observation, on the one hand, and experimentation, on the other, is, as Mill says, not one 'in kind,' but a 'practical' distinction only.

A good typical instance of experimentation of least complexity is found in the case of Pasteur's experiment upon the condition of air in different places.¹¹ He arranged a number of sealed flasks containing some substance in which bacteria thrive. These he opened in turn to the air at different points, some in the low country and some high among the snow peaks of the Alps. He afterwards examined the contents to discover at which spots, if any, the air which had entered the flasks had not brought with it bacteria. Such a set of processes is an experiment, because the conditions which the substance within the bottles met were made distinctly artificial. Pasteur did not find substances isolated, exposed to the atmosphere at a single given spot and then isolated again. True, he himself did not touch the contents of the bottles directly in altering their conditions, but yet he did so indirectly by removing and replacing their seals. Experimentation in many cases calls, of course, for much more elaborate apparatus.

Such processes are to be contrasted with the two kinds of observation. First, with those methods which, however elaborate, are used with the intention merely of getting a better view of the object. So far as that particular object is concerned we might imagine here that the investigator's hands are tied behind his back. Besides the careful watching needed as an element in all investigation this class includes the use of various magnifying and measuring instruments and similar contrivances, and as well different forms of copying, I think. All photographs do not stand on the same basis here. For the geologist they serve as illustrations for communication and thus are not a part of the methods of science, but rather of its means of promulgation. The photographs of the astronomer, however, are taken not that he may show some one else what he has seen, but that he may himself compare the condition of a part of the heavens on one night with its condition on another, and that he may make measures to determine the size of the stars and their relative positions at his leisure and in a convenient manner. He uses the photographs and gains more from them than he could have gained, at least with the same amount of effort, from direct observation.

The name of the group representing the second form of observa-

¹¹ *Loc. cit.*, pp. 127-8.

tion would be dissection but that, as a pathologist suggested to me, many dissections are performed with the avowed purpose of creating specific artificial conditions in the subject examined. With vivisections, for instance, this is generally true. 'Material classification' was suggested by Dr. Royce as following Kemp's assertion that the essence of classification is the marking a group of things off from others unlike them, rather than the binding of like objects together. There we have the motive of this second kind of observation at work. In order to study them more closely we separate the heart and lungs of a rabbit, for instance, from their natural surroundings.

By the records referred to something is meant other than the descriptions used continually in communicating results. When the physician records he notes only certain aspects (such as temperature, pulse, etc.) which he considers significant, and entirely ignores other aspects of the patient (such as complexion and height, perhaps), assuming that they have no bearing on the nature and cause of the disease. As a result he gives us only, as it were, a skeleton, or perhaps the breath or the heart of a man, with no suggestion as to how these scraps are to be filled out to reproduce the original he studied. In the descriptions made purely for the sake of communication details are often omitted, but there they are left unstated either because, as perhaps with colors, they are implied in the names of the trees and the rocks given or because the writer himself has forgotten them. In making records the investigator is conscious that what he gives can not be found by itself, just as a nerve can not be found except it be taken from an animal body. In his record he isolates aspects of the situation before him from the other conditions that invariably accompany them, and believes that none of the relations annulled by such isolation have any influence upon the aspects he does report.

The classification may be objected to as a whole on the ground that these classes which I have distinguished from each other are not really distinct, so that many true cases can be produced as evidence of its insufficiency. In what I call simple observation, for instance, the mere fact that our attention is centered upon one part of the field rather than another alters the aspect of that field somewhat. We can not be sure in any given instance that we do not interfere with the object we study. It is true, also, that no one who has read of the weeks of drill and the great precautions taken against jar and dust at the time of making observations of the eclipse of the sun in August, 1905,¹² or of the care with which an astronomer must adjust his telescope and ward against imperfections in its action¹³ can feel

¹² *Nature*, September 7, 1905. Letter by W. J. L. Lockyer.

¹³ Cf. 'Annals of the Astronomical Observatory of Harvard College,' Vol. XXVI, Pt. I.; Vol. XVIII., No. VII.

that the scientist finds it an easy matter to be sure that he perceives the phenomenon exactly as it is, by means of his reenforced sense organs. Measures, too, must be made with great care, often with the aid of microscopes, and must be revised as new and more accurate instruments are invented. It would seem to take fully as much effort and thought and preparation to guard against interfering with the natural course of phenomena as to plan just how one should interfere. We must, as it were, greatly interfere with our own natural course of action in order to guard against intruding ourselves upon the object we observe. The same thing is, of course, to be said, perhaps with more force, in the case of all dissections. In isolating the specimen we have the greatest difficulty in keeping it intact. For these reasons the subjective qualification is introduced into my definition, the qualification that the interference must be conscious and voluntary. Whenever the investigator believes that he has not interfered, he observes.

The line cases and the complex cases which can be pointed out are many; so, too, are the perplexing cases that can be classified only after a more careful examination. The large number of line cases suggests, what I must readily admit to be true, that their proper name is borderland cases,—that the division between the classes is made by a stretch of neutral territory rather than by a definite narrow fence.

We have, for instance, an investigation which Lord Kelvin describes that offers some difficulty.¹⁴ In this the experimenter placed his head between the poles of a horseshoe magnet to determine whether he would become thus directly aware of the condition which made a piece of copper slip through the space 'as if through mud.' The pure observer goes to a selected spot to watch the action there. The operation in this instance could be so described. The investigator put his head in a certain spot in the hope that he might observe the conditions there. What this investigator wishes, however, is to learn the effect of certain conditions upon his nerves (or muscles, perhaps) other than those of the senses which are properly called into play in simple observation. He plays a double part, as it were. He puts himself in the particular spot more that he may, if possible, become affected by the conditions there than that he may watch the play of those conditions among themselves as the geologist watches the eruption of a volcano. Thus this would seem to me to be an example of experimentation.

For a different reason the case in which Malus held the crystal up to observe its effect upon reflected light is perplexing.¹⁵ He

¹⁴ *Loc. cit.*, pp. 127-8.

¹⁵ 'Life and Works of Pasteur,' as given, Vol. I., p. 345.

altered the place of the crystal and so brought light to play upon it. When the zoologist pulls his subject into a better light as he dissects it, or reflects light upon a microscope slide, we should not say that he thereby experiments upon it. Malus placed his crystal in the light and looked through it, much, it would seem, as one looks through a microscope. That he might have chanced to lay it on a window in such a way that the same effect was produced, and might then have observed the effect, does not, it is true, bear on our point because in such chance action the change of condition would not have been both consciously and voluntarily brought about. But that he merely consciously and voluntarily changed its relation to light seems hardly enough to warrant calling the operation experimentation. The fact that the light was known to be reflected and not direct sunlight, however, and the fact that crystals and light react on each other in a manner not true in regard to animal bodies and light, introduce a sufficient element of really changed conditions to make it seem best to me to class this as on the borderland between experimentation and simple observation.

We have also to consider the references made by Wüllner in his section on acoustics¹⁸ to general experience with musical instruments as to the effect of different sorts of bows, bridges and hammers upon the nature of sound. Musical instruments were by no means made for the purpose of testing the principles of acoustics. It is entirely immaterial to the experimenter whether he produces the sound or whether he chances to note it during the performance of a concert. Yet the instruments themselves are very carefully and very artificially constructed, and serve the purposes of science so exactly that if they had not been manufactured for the purposes of the musician the scientific investigator would have perforce constructed something very similar, for himself. These operations again seem to lie in a stretch of neutral territory between simple observation and experimentation.

These few examples have indicated that the different classes of the forms of observation do not represent stepping-stones from simple observation to experimentation, as those would suggest who insist that the essential of experimentation is complexity of apparatus. We can find examples that are in a neutral field between practically each kind of observation and experimentation itself. The only necessity for experimentation is conscious and voluntary interference with the object studied. This may be made directly with our own hands or may be accomplished by means of apparatus of various kinds.

The claim which such a definition makes for general acceptance

¹⁸ A. Wüllner, 'Experimental-Physik,' Vol. I., pp. 874-5.

The tests were concerned mainly with the speed of reading aloud. In the first experiment, passages I., II., III., IV., VIII., IX., X. are from scientific works, but only passage III. is at all complex in

TABLES

A, B, C, etc., 1, 2, 3, etc. = subjects. *I., II., III., etc.* = passages.

TABLE I.

	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>
I.	31.4	32.8	34.4		28.2	42.4
II.		36.2	35.4	36.8	29.4	44.8
III.	32.2		36.2	38.8	30.6	47.2
IV.	32.2	34.6		42.2		
V.	34	32.4	39	35.8	29	46
VI.	34.4	35.6	36.6	41.4	34.6	44
VII.	33.4	35.2	36	42	36.2	54.4
Av.	33.1	34.5	36.4	39.5	31.3	46.5
M. V.	.7	1.2	1.2	2.3	3.2	2.8

TABLE II.

I.	27.6	28.8	35.4	33.8	24.4	29.8
II.	27.8	29.4	37	33.6	24.6	31.2
III.	29.4	31.2	39	36.6	26.4	31.2
IV.	26.4	29.8	36.4	35.6	25.6	29.4
V.	25.4	28	35	33.6	25	41.8
VI.	29.6	21.6	36.6	35.4	28.4	38.4
VII.	27.8	30.8	37.6	37.6	31.2	45
VIII.	31.2	32.2	42.2	41	32.4	45
IX.	31.2	24.6	29.6	29.2	24.6	36.4
X.	29.4	28	33.8	34.6	24.4	48.8
Av.	27.3	29.4	36.3	35.1	27.1	37.7
M. V.	1.8	1.7	2.4	2.1	2.1	5.9

TABLE III.

	<i>Av.</i> ₁	<i>Av.</i> ₂	<i>M. V.</i> ₁	<i>M. V.</i> ₂
<i>A</i>	2	2	1	2
<i>B</i>	3	3	2.5	1
<i>C</i>	4	5	2.5	5
<i>D</i>	5	4	4	3.5
<i>E</i>	1	1	6	3.5
<i>F</i>	6	6	5	6

TABLE IV.

	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>
I.	2	3	4	5	1	6
II.	2	4	3	5	1	6
III.	2	3	4	5	1	6
IV.	2	3	4	5	1	6
V.	3	2	4	5	1	6
VI.	2	3	4	5	1	6
VII.	1	2	4	5	3	6
VIII.	1	2	5	4	3	6
IX.	5	1.5	4	3	1.5	6
X.	3	2	4	5	1	6

TABLE V.

	<i>Av.</i>	<i>M. V.</i>		
1	19.6	.85	1.5	3
2	27	.3	3	2
3	22.2	.65	7	1
4	27.8	2.45	9	10
5	27.6	1.35	8	6
6	23.1	1.1	4	5
7	19.6	.95	1.5	4
8	26.8	1.85	6	8
9	28.3	1.95	10	9
10	23.5	1.7	5	7

TABLE VI.

	<i>C</i>	<i>N</i>	<i>R</i>
1	21.8	15	.69
2	19	14.4	.75
3	24	14	.58
4	17.2	16.2	.94
5	23.4	16.4	.71
6	27.4	15.6	.57
7	25	21.4	.86
8	24	17.2	.72
9	26.2	17.4	.66
10	24.2	13.4	.54
11	18.8	16.4	.87
12	23.6	18.4	.78
13	28	19	.67

mentation the various factors that contribute to this efficiency, yet there is one single mental attribute, itself capable of many modes of experimental approach, that should show, if the proper method of approach be found, a quite close correspondence with general intellectual efficiency. This is the command over language, practically our sole experimental gateway to all the higher mental processes except attention. Nearly all the factors that constitute our intellectuality—as apart from our intelligence—come to us and go out from us through linguistic media. There seems to be no necessity for any detailed defense of this postulate; linguistic ability, if only the proper test of it can be found, should serve as a sound criterion of intellectuality. Such a measure, were it only precise enough, would be, needless to say, of considerable practical interest.

The memory tests are open to objection for the reason that they can be said to serve as a measure only of what per cent. of the individual experience has been probably retained. The fullness of this experience will vary, as well as its retention will vary, and this factor it is impossible to take into account by means of memory tests. They are dynamic rather than static measurements. In practice, however, it seems as though they failed even here, for the ordinary tests often fail to disclose in men of the highest intellectual ability any special logical or physiological retentiveness. Here also the varying factors of interest and attention are of prime importance, and equally impossible to control.

The association tests are also replete with technical defects. The difficulties in scoring would seem to make the ordinary test of uncontrolled association quite valueless, save for purely qualitative purposes. The special form of this experiment devised by Jastrow, in which the subject writes a fixed number of independent words as rapidly as possible, or preferably, writes as many independent words as possible in a given time, is much more objective in character, and probably altogether the best of the uncontrolled association tests. With proper technical precautions, this test ought, indeed, to afford a measure of the intellect, and be quite valuable where availability as a group test is a factor. As a test of intellectuality on a fine scale, however, the difficulties in scoring would seem almost insuperable.

The tests of partially controlled association, especially those of the synonyms and opposites type, are peculiarly open to this objection when the subject knows that he is being timed. For example, as an opposite of *simple* we obtain from one subject *difficult* and from another *complex*. The second subject takes half as long for the series as the first. We do not know what the first would have done had he taken as long as the second. It is the same difficulty as

with many of the motor accuracy tests; two unknown quantities and one equation. The test is valid only when every one has done his best regardless of time. As the education of the subject increases, so do the difficulties in scoring. We should probably disagree violently as to the proper manner of scoring individuals who respectively returned *perpetual, immutable, enduring, fixed, constant*, as synonyms of *permanent*.

Only where the association is so closely controlled as to render but one association possible can the time factor be justly taken into account. The chronoscope and voice-key lend themselves readily to the measurement of single associations. The most important work from this point of view is probably that of Cattell in the *Psychometrische Untersuchungen*. It is the most precise of all the methods, but it has certain technical limitations, and is rather cumbersome for practical purposes, to which the chain reaction is perhaps better adapted.

All valid tests of the higher mental processes should conform to one fundamental requirement; they should give the subject a certain definite thing to do, and admit of objective determinations of done, not done, or how well done. So far as association is concerned, only the time measurements of absolutely controlled associations really conform to this requirement. Otherwise arise the scoring difficulties that are fatal to validity. We can not well apply such an analogue of the method of average error to the higher mental processes because the scale is too ill defined. The association being under complete control, the results should contain only unquestionable rights or wrongs.

Several tests of this sort were devised and employed, among others, in Mr. F. G. Bonser's as yet unpublished investigation into the reasoning powers of children. Blanks were left in simple sentences for which there was only one appropriate word, the subject being required to supply it as quickly as possible. Two opposite words were printed, one above the other, in simple sentences, the subject crossing out that one which would make the statement an untruth. Logical and fallacious reasons were given for certain facts, the subject checking the good reasons. This last may be compared with the absurd sentence test, in which the subject checks those sentences which state as a fact a manifest impossibility; as, "The count paced up and down the garden reading the newspaper with his hands behind his back."

A simple test of the extent of vocabulary has been employed with good results by Kirkpatrick. The blank in the writer's possession contains the opposites test and a request for the definition of words of varying educational implication, but the most significant portion

of the test is a selected list of words most of which are considerably above the average difficulty, the subjects being asked merely to indicate the words that they know, do not know, or regarding which they are in doubt. It is unquestionably subject to certain errors in the individual, but for a large number of subjects these tend to compensate, and to remain constant as between groups. As between individuals, where the test of intellectuality has its greatest practical application, a strictly empirical demonstration of its validity will be desirable.

All of these tests, however, necessarily lack the objective character of a strictly motor test of linguistic ability, provided a satisfactory test of this nature can be devised. This it has been the writer's attempt to do. That only a very modest degree of success can yet be claimed the figures given will show, but the attenuated correlations which do appear indicate some possibilities in this direction.

Experimental psychologists have two ways of approaching problems of this nature. We can say, for example, 'let the *a-t* test measure perception of weight,' and then assume individual differences therein as indicated in the test. This procedure may be sometimes necessary, but it has been too frequently followed; certainly many of the conventional laboratory tests do not measure what they are given to measure, or else they measure a great deal besides. The other method is to empirically select individuals with known differences in the trait we wish to measure, and to seek a test which shows correlation with these differences. Before applying a theoretically devised measure to wholly unknown individuals, we should first test our tests.

The writer selected six individuals according to their degree of objective intellectual performance. These are denoted according to this degree, *A, B, C, D, E, F*. The differences between *A* and *B*, *B* and *C*, are clearly marked; that between *C* and *D* is largely subjective. *E*, however, is distinctly below *D*, and *F* below *E*; in fact, the difference between *E* and *F* may well be greater than that between *E* and *A*. The individuals are all adults, and the writer would estimate that they occupied, intellectually, a range of from the upper tenth of the distribution to about the middle.

As the problem was preeminently a search for a test many conditions are imposed that turned out valueless, and in some cases even impaired the significance of the figures that gave results. The writer does not wish therefore to be held accountable for resultless peculiarities in the presentation of the experiments, whose significance, or lack of it, could not have been determined in any other way.

The tests were concerned mainly with the speed of reading aloud. In the first experiment, passages I., II., III., IV., VIII., IX., X. are from scientific works, but only passage III. is at all complex in

TABLES

A, B, C, etc., 1, 2, 3, etc. = subjects. *I., II., III., etc.* = passages.

TABLE I.

	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>
I.	31.4	32.8	34.4		28.2	42.4
II.		36.2	35.4	36.8	29.4	44.8
III.	32.2		36.2	38.8	30.6	47.2
IV.	32.2	34.6		42.2		
V.	34	32.4	39	35.8	29	46
VI.	34.4	35.6	36.6	41.4	34.6	44
VII.	33.4	35.2	36	42	36.2	54.4
Av.	33.1	34.5	36.4	39.5	31.3	46.5
M. V.	.7	1.2	1.2	2.3	3.2	2.8

TABLE II.

I.	27.6	28.8	35.4	33.8	24.4	29.8
II.	27.8	29.4	37	33.6	24.6	31.2
III.	29.4	31.2	39	36.6	26.4	31.2
IV.	26.4	29.8	36.4	35.6	25.6	29.4
V.	25.4	28	35	33.6	25	41.8
VI.	29.6	21.6	36.6	35.4	28.4	38.4
VII.	27.8	30.8	37.6	37.6	31.2	45
VIII.	31.2	32.2	42.2	41	32.4	45
IX.	31.2	24.6	29.6	29.2	24.6	36.4
X.	29.4	28	33.8	34.6	24.4	48.8
Av.	27.3	29.4	36.3	35.1	27.1	37.7
M. V.	1.8	1.7	2.4	2.1	2.1	5.9

TABLE III.

	<i>Av.</i> ₁	<i>Av.</i> ₂	<i>M. V.</i> ₁	<i>M. V.</i> ₂
<i>A</i>	2	2	1	2
<i>B</i>	3	3	2.5	1
<i>C</i>	4	5	2.5	5
<i>D</i>	5	4	4	3.5
<i>E</i>	1	1	6	3.5
<i>F</i>	6	6	5	6

TABLE IV.

	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>
I.	2	3	4	5	1	6
II.	2	4	3	5	1	6
III.	2	3	4	5	1	6
IV.	2	3	4	5	1	6
V.	3	2	4	5	1	6
VI.	2	3	4	5	1	6
VII.	1	2	4	5	3	6
VIII.	1	2	5	4	3	6
IX.	5	1.5	4	3	1.5	6
X.	3	2	4	5	1	6

TABLE V.

	<i>Av.</i>	<i>M. V.</i>		
1	19.6	.85	1.5	3
2	27	.3	3	2
3	22.2	.65	7	1
4	27.8	2.45	9	10
5	27.6	1.35	8	6
6	23.1	1.1	4	5
7	19.6	.95	1.5	4
8	26.8	1.85	6	8
9	28.3	1.95	10	9
10	23.5	1.7	5	7

TABLE VI.

	<i>C</i>	<i>N</i>	<i>R</i>
1	21.8	15	.69
2	19	14.4	.75
3	24	14	.58
4	17.2	16.2	.94
5	23.4	16.4	.71
6	27.4	15.6	.57
7	25	21.4	.86
8	24	17.2	.72
9	26.2	17.4	.66
10	24.2	13.4	.54
11	18.8	16.4	.87
12	23.6	18.4	.78
13	28	19	.67

thought; the remainder are from works of fiction. The passages are all one hundred words in length. Each subject first read aloud V., VI., VII. at subjectively normal rate, also three of I., II., III., IV. as indicated in the table. The fourth was read as rapidly as possible. Upon this occasion these passages were seen for the first time. On a subsequent date the subject read the passage previously read at rapid rate thirty-seven times in succession as rapidly as possible, and on subsequent dates each of the other first four passages was so read forty times, giving in all a practise curve of forty most rapid readings of each of passages I., II., III., IV. Later the subject again read at subjectively normal rate the whole ten passages, VIII., IX. and X. being now seen for the first time.

Table I. gives in seconds the time, average and M. V. of the six passages read at the first sitting, and Table II. gives the time, average and M. V. for the ten passages read at the second sitting, all at subjectively normal rate.

In both series there will be observed a general tendency for both average and M. V. to increase as we go down the scale. In Table I. the averages increase regularly save for the important exception of subject *E*. With this same exception, now in the other direction, the M. V.'s also increase regularly. The situation is reversed for *C* and *D* in Table II., but it has been noted that their positions are subject to a large probable error. However, if we compare *C*'s record in the two tables, the influence of diurnal variation would seem to be indicated. Subject *E* again stands higher than he should. His subjectively normal and most rapid rates of reading approximate one another more closely than is the case with the other subjects. The considerable practise with series I., II., III., IV. shortens all the repeated readings somewhat, whether among those practised or not. It will be noted that this practise has in subject *F* formed two species in the second readings, leading to an extra large M. V. The M. V. of I.-VI. is very small, but that of V.-X. is very large, larger than that of any of the other subjects, as is also the average of the two M. V.'s. Other results of the experiment, as the ratio of the normal and rapid reading, etc., do not appear to correspond so closely with the empirical series. Table III. gives the results in synoptic form by stating relative positions instead of the figures themselves. Thus *E*'s average was quickest for both series of readings, while his M. V. was greatest in the first and shared third and fourth places with *D* in the second. On the whole, the first readings are better than the second, and except for *E* the average is superior to the M. V., though both should be known. The character of the practise curves seemed to be related to other mental traits in the individuals, but had no traceable connection with the intellectual. Table IV.

gives the relative position of each subject in the rate of reading each passage. Thus I. was read by subject *E* fastest, *A* next and *F* slowest. Considering the small absolute differences, it seems worthy of note that the rates are so constant.

In reading aloud a wholly unfamiliar language, it would make no difference to our speed whether the words were in logical order or not. In so far as we did derive their sense should our speed with the logical order be increased over the illogical. Upon this theory a test was devised in which the subject read as rapidly as possible series I.-IV., and then read as rapidly as possible the words composing them in nonsense order. Nonsense syllables would have been preferable, as the writer now realizes. The subjects differed from those in the first test, only positions 1 and 2-3 being fairly certain. The differences are also very much smaller, and for the most part wholly subjective in estimate, as it did not appear worth while to obtain accurate judgments of relative position from a number of graders. The ratios of the two times, while showing much individual difference, appear so entirely unrelated to intellectual performance that it has been deemed hardly worth while to print them. They range from .47 to .97. Table V. shows in the first and second columns the results of this experiment for average and M. V., in the third and fourth the relative positions for average and M. V. The differences are not nearly so well marked as in the previous test, but the method should hardly be discarded on this account, for the number of observations and the differences in the subjects are very small, while correlation is by no means altogether absent. Striking exceptions to the rule, as *E* in Tables I. and II., are subjects 4 and 7.

During the course of the *Psychometrische Untersuchungen* the observation was made by Cattell that a comparatively illiterate porter used as a subject required a longer time to read the name of a color than to name it, while the cultured subjects could read the name more quickly than they could name the color. The writer arranged a chain-reaction experiment with the four colors, red, green, blue, yellow, fixing twelve red and twelve green, thirteen blue and thirteen yellow slips upon a white background in a frame, while two similar frames contained the names of the colors in opposite orders. The color slips were so cut and arranged as to occupy the same average space as the names. The time was taken which the subject required to read the colors, and then their names in reverse order, and the ratio calculated. This experiment was performed upon thirteen subjects partly identical with those who had undergone the previous tests, and covering about the same range of intellectual ability as in the first test described. As shown in Table VI., all subjects name the words faster than the colors. If we disregard the ratio, and take

the time in either test singly, the experiment is brought into line with the speed of reading tests. For a series of single observations, the result is rather suggestive. Important isolated exceptions occur for the colors in subjects 6 and 11, and in 10 for the names. The ratios, however, are simply chaos, just as were those in the previous experiment. The writer has examined the ratios with reference to other traits in certain of the subjects, but no correspondence with any factor of character is observable. The two perhaps most temperamentally similar subjects of the experiment—3 and 4—are nearly the most different in their ratios. There seems to be good theoretical ground to discredit the ratio as a desirable form in which to state results of this nature, for besides being highly subject to attenuation, it puts a premium on the subject's doing badly in one of the tests.

Most of the results are therefore negative. Two factors appear related to intellectuality: the speed of absolutely controlled association and its constancy relative to that of other individuals over a similar series. High speed and low variability go with intellectuality, low speed and high variability with the reverse; both high or both low are doubtful, but seem to be associated rather with the latter. To all these generalizations, however, one must be prepared for striking individual exceptions.

FREDERIC LYMAN WELLS.

COLUMBIA UNIVERSITY.

REVIEWS AND ABSTRACTS OF LITERATURE

Die Erkenntnistheorie der Naturforschung der Gegenwart: H. KLEIN-PETER, Ph.D. Leipzig: Johann Ambrosius Barth. 1905. Pp. xii + 156.

"The work before us agrees in general with the views as to the nature of knowledge expressed by Mach, Kirchhoff, Hertz, Stallo, Clifford, Pearson, Ostwald and Cornelius" (p. xi). It is dedicated to Ernst Mach. A theory of knowledge has developed in the second half of the last century on the basis of the exact sciences, and the author proposes to give it a much-needed systematic presentation. His method is neither historical nor critical, although he assumes a very critical attitude toward the science of metaphysics and the traditions of philosophy. Our only means of testing the correctness of views is through further experience, and this is a merely negative test, telling us only what is not true, but never what is. "Where this test does not apply, as in judging philosophical opinions, all genuine progress has been wanting for more than

two thousand years" (p. 2). Opinions which can not be tested by experience are only hypotheses; those which can be so tested are theories (p. 127). Philosophy in the sense of metaphysics is made up of hypotheses and lacks all scientific value.

The new theory of knowledge is characterized in three directions. First, in its insistence upon exactness, understood as a complete statement of the conditions under which its propositions are valid. "The form of its statements is therefore not the categorical, but the hypothetical" (pp. viii and 120 f.). Secondly, in opposition to the *Uebergriffe* of the mechanical view of the world, the newer view confines the investigator to the sphere of the experienceable (p. viii). It is the phenomenalist point of view and follows as a necessary consequence from the principle of exactness. Lastly, the new theory of knowledge believes in 'a careful investigation of the meaning of our own words and constructions' (p. ix). This also follows from the principle of exactness, and this is the particular task of the author's book.

All knowledge is relative. There is no unconditioned absolute knowledge. Hence the possibility of the theory of knowledge as science. It is quite impossible to build a conception of 'thing-in-itself.' All fundamental knowledge bears in itself the form of a relation. A system of truths existing in and for itself and quite independent of the subject is impossible. Every truth or knowledge appears in the first place as the production of some individual. "Subjective conviction (*Ueberzeugung*), not objective certainty, is the only attainable goal of science" (p. 9). Moreover, the problem of science is no other than to be helpful in the acquisition of knowledge. A scientific work is not a magazine of finished and definitely formulated knowledge, but a guide by which to get knowledge—somewhat as a cook-book does not contain the eatables themselves, but guides us in the preparation of them (p. 13). Science mediates knowledge by showing that with the acceptance of some truths the acceptance of others is bound up, but science says nothing as to the necessity of accepting truth in general. We possess certainty in one case upon which such a compulsion rests, namely, immediate experience, the living through any content of consciousness. Science tells us that other certainties are bound up with this immediate certainty of experience. The author wishes to lay before the reader, first, the facts which underlie knowledge; then, a formal conception of knowledge based on these facts, and then its meaning or application. This is the method of physics, and, indeed, of all science properly so called.

"The first fact which meets us is that of the psychic nature of all facts" (p. 18). The physical is at bottom only a few sensations which we by association supplement and project into an 'external' world. "What I have seen is indeed only a few visual sensations" (not a person or a substance) (p. 21). "Thus we see that in our most ordinary expressions we are *arge Hypothesenschmiede*. On the ground of a single visual sensation we propose the hypothesis of having seen a man!" The senses never deceive us, but when we imagine that the senses give us a knowledge of objects error becomes comprehensible. Quoting Mach: "'Not

things (bodies), but colors, tones, pressures, spaces, times (what we usually call sensations) are the proper elements of the world' (p. 22). Among the elements of consciousness we distinguish, first, the different types of sensation; secondly, the memory of these; third, complexes constructed of these two; and fourth, the feelings. The last give unity to consciousness and to the objects which make up its content. Feelings are nearer to us than the other elements, and this is the first important motive for constructing the conceptions of 'I' and the 'outer world.' The 'I' is, however, no mere sum of conscious contents, and is not itself an element of content. The author speaks of the self-activity of the ego (*des Ich*). Other names for it are 'spirit,' 'soul' and 'will,' and 'thought is a function of the will' (p. 32). The 'Ich' is always able to place itself over against its own conscious contents, to manipulate these, observing them more sharply or letting them pass into the background, to analyze them and to compare their parts with each other. This is the 'activity in consciousness' which the author regards as an indisputable fact of fundamental importance. Owing to the feeling of this activity which we possess, the activity itself introduces new elements into the content of consciousness and gives rise to the distinction between given facts and the pure constructions of my spirit (*Willenshandlungen*). The former appear in consciousness without the activity of the mind to assist them; indeed, they appear in spite of it. The latter, I myself bring forth.

'The justification of any concept, then, springs from its availability' or utility (*Benutzbarkeit*) (p. 38), and conception can only deal with actual and possible contents of consciousness. Protagoras was right in interpreting the expression, 'man is the measure of all things,' to mean that the activities and attributes of the human race are the measure of all things. Objective truth or knowledge is a secondary product. Each knowledge has significance primarily only for the individual who produced it. At bottom I know absolutely nothing as to whether outside of me there are other egos or not. My life confines itself to the circle of my consciousness (p. 43). Every act of knowing is a will-act, and thinking is dominated by considerations of economy and simplicity. The activities in which the thinking of the individual consists are the distinguishing of the different, the apprehension of relations of similarity between the different, the analysis of the discovered content to reduce similarity to equivalence, and the synthesis of previously separated elements.

Knowledges are classified first as formal and historical, the former dealing with properties of our memory pictures and imaginings and of all such contents of consciousness as we are able voluntarily to produce, the latter dealing with those contents which present themselves in entire independence of our wills. The formal sciences include logic, arithmetic, the science of combinations, geometry, kinematics, dynamics and and so forth; while the historical, which seek to establish facts or events independent of the will, include the history of humanity, the history of the earth, of the world, descriptions of single objects, geography and to some extent natural history. The real sciences constitute a third class

dealing not with facts for their own sake, but with regularities, uniformities and laws. They are physics, chemistry, biology, psychology. Certain typical sciences are discussed in order to get at the principles underlying them. The author treats logic, the theory of number, physics (its principles, presuppositions and goal), the value of hypotheses (as distinct from theories) in physics, and the natural view of the world. All knowledge, even that of logic and mathematics, is hypothetically, not categorically, certain. "It is possible to put forth many theories as to one and the same realm of facts, theories all of which satisfy the demands of admissibility and correctness and are nevertheless distinguishable from each other" (p. 112 f.).

Knowledge has a greater worth practically than theoretically. The discrepancy between the demands of practical living and the limits of strictly scientific investigation gives rise to philosophy, a system of hypotheses which can not be experienced or tested by experience. Hungry men do not wait for science to demonstrate the nutritive value of bread. It is necessary, however, to keep distinct the line of demarcation between science or theory and hypothesis. We owe it to a lucky accident merely that many of our hypotheses define conditions which practical life fulfills. Their fulfillment is something we have not the slightest theoretic reason to expect.

This book is typical of the movement which it represents, in that it voices a demand for the unification of knowledge in a critical theory of the presuppositions and methods of science. One of the most striking characteristics of the development in exact science in the latter half of the nineteenth century is the consciousness of this demand. The author is correct in saying that one of the distinguishing peculiarities of recent science is the attempt to criticize its own presuppositions and constructions. It is characteristic of the movement, too, that it seeks unification and the removal of discrepancies, not in a hypothetical metaphysic, but in a theory of scientific method. Understanding the term to include the theory of all method, we should say there is no other genuine unification of knowledge than this; and if we ask Kant's question, what kind of a world must ours be, seeing that it is knowable, we can only answer by pointing to the contents of the various sciences. For the mind to set about discovering the limits of knowledge by defining a reality which can not be known, as Locke did and as Kant resulted in attempting, is to be misguided by a contradiction. We are as likely to succeed in defining the space which lies beyond all space as in defining the 'being' of substance, *das Ding an sich* or a transcendent absolute.

But the theory of knowledge of this book is founded on what might be called the epistemologist's fallacy, the doctrine that 'all facts are psychic facts,' or, as Mach puts it, that 'not things (bodies), but colors, tones, pressures, spaces, times (what we usually call sensations), are the proper elements of the world.' This is reading into immediate experience (which the author regards as the basis and source of all certainty, the ultimate premise of reflection) certain distinctions which are the results of reflection. To say that all facts are psychic implies

that there is something else (*e. g.*, physical) which they might be. Sensations are scientific abstractions; they are not to be confused with the original datum with which reflection begins her task of interpreting immediate experience. It is because of this fallacy that the author is compelled to ascribe to science at last a much lower theoretic than practical value. If the only data of science were the sensational and memory elements entering into the content of consciousness, as Kleinpeter holds, solipsism would necessarily be the final word in our theory of knowledge, and the theoretic value of science would be even lower than our author supposes. For some of the theoretic values which he accepts presuppose the existence of other consciousnesses and other Leibnitzian worlds, a presupposition which, from the author's standpoint, admits of no sort of reflective demonstration.

Moreover, knowledge can possess validity, from this point of view, only for the moment when it arises. The author holds that by giving the conditions under which knowledge arises this difficulty is overcome. "The knowledge which in the first place possesses value only for the moment can acquire a lasting value through the citation of the conditions under which it retains validity (*durch die Angabe der Bedingungen unter denen sie Gültigkeit behält*)."

But the author does not maintain that the elements of consciousness (sensations, memories of sensations, complexes of these, and feelings) are things which perdure. He holds that things are reducible to sensations, etc., but the reverse proposition that sensations are things is another matter. He recognizes the intermittent and transient character of the elements of consciousness. What, then, from this point of view, can the conditions under which knowledge retains its validity be? Practically knowledge has value, but a value which we have, on this basis, absolutely no reason to expect and no means of justifying.

Some other points may be barely mentioned at which the author's treatment seems to the reviewer inadequate. His doctrine as to the function of science, that science, like a cook-book, guides us in the attainment of knowledge but does not itself contain or give us the good things on which the intellect subsists, does not convey a definite meaning. Science is a guide in the attainment of further experience, but this is the function of all knowledge, and experience is richer than knowledge. His treatment of objectivity, space and perception seems to the present writer very incomplete—so much so that we get no definite idea from it. His conceptions of immediate experience, and of the will-acts through which knowledge arises, are extremely vague. In the sense in which he uses the term, immediate experience is only a name for the abstract quality of immediacy, and the experiences he seems to regard as immediate (sensations, etc.) are themselves abstractions. The distinction between the physical and the psychical is not clear. The work, in short, is too brief, and although well-conceived, too schematic to be persuasive.

G. A. TAWNEY.

BELOIT COLLEGE, WISCONSIN.

Lectures on the Method of Science. Edited by T. B. STRONG. Oxford: The Clarendon Press. 1906. Pp. viii + 249.

A course of lectures on scientific method was delivered at Oxford during the Summer Meeting of 1905 at the request of the Delegates for the Extension of University Teaching. Nine of the lectures have been brought together in the present volume under the editorship of Dr. Strong, Dean of Christ Church, who contributes himself the closing lecture on 'Scientific Method as Applied to History' and also a preface explaining the general aim of the course—which was to illustrate the 'forms taken by scientific method in various departments of research.' The remaining lectures are as follows: 'Scientific Method as a Mental Operation,' Thomas Case, M.A., President of Corpus Christi College and Waynflete Professor of Moral and Metaphysical Philosophy at Oxford; 'On some Aspects of the Scientific Method,' Francis Gotch, D.Sc., F.R.S., Waynflete Professor of Physiology at Oxford; 'Physiology; its Scope and Method,' C. S. Sherrington, D.Sc., LL.D., F.R.S., etc., Professor of Physiology, University of Liverpool; 'Inheritance in Animals and Plants,' W. F. R. Weldon, D.Sc., F.R.S., Linacre Professor of Comparative Anatomy at Oxford; 'Psychophysical Method,' W. McDougall, M.A., Wilde Reader in Mental philosophy at Oxford; 'The Evolution of Double Stars,' A. H. Fison, D.Sc.; 'Anthropology: The Evolution of Currency and Coinage,' Sir Richard C. Temple, Bart., G.C.S.I., D.C.L.; 'Archeological Evidence,' W. M. Flinders Petrie, D.C.L., F.R.S., Professor of Egyptology, University College, London.

This array of titles and lectures is sufficient to provoke admiration and interest at the outset and to pitch the reader's expectations rather high. Dr. Strong's preface, although written with noticeable caution, adds to one's anticipations. For we have in this Oxford course an attempt to meet a demand felt by educators and investigators alike to bring a little more unity into the too detached departments of human knowledge. It is socially and educationally significant that this attempt should have been made at an Oxford Summer Meeting under the auspices of the university extension movement, because the circumstances indicate—at least in the minds of those who planned the course—that interest in the unification of knowledge is quite general, and not the exclusive possession of students of logic. It is philosophically significant that the unification should have been attempted through a discussion of scientific method concretely illustrated from various departments of research because it suggests that science is essentially not a body of knowledge, but a method of investigation and an instrument by which nature may be measurably controlled. Skilled in the use of this method and instrument, one might face the varieties of knowledge with composure and, possibly, with confidence. One's conquests would tend to promote at least an administrative unity.

The present volume, however, depends too much upon its title and its preface. Uninspired by their suggestions, the reader would not suspect that he was following a course on scientific method. He would rather suppose that he was receiving an amount of very interesting and very

miscellaneous information. Professor Case's lecture is a brief treatise on inference by analogy, by induction and by deduction, and departs very little from traditional logic. Such a treatment has become too obviously formal to throw much light on scientific method as a mental operation. Perhaps little light can be thrown upon it as such in any event, for scientific method appears to be not so much the mental operations involved in the making of inferences as a handling of material in a way to make inferences easy and obvious. If the title of Professor Gotch's lecture had been 'On some Aspects of the Scientific Temper,' it would have more accurately described the contents. They deal little with method, but much and interestingly with the temperamental characteristics of scientific men as these are revealed by the opposition science has encountered in its progress. The reader may be led to appreciate that for which science stands, but he will not be much wiser in its methods. Under the caption 'Physiology; its Scope and Method,' Professor Sherrington writes most entertainingly on the heat of the body, but in spite of ingenious suggestions and occasional reminders he can hardly expect the reader to believe that he is thereby illustrating the method and scope of physiology. One attending the Summer Meeting would have been unwise, however, if he had avoided the lecture on that account.

Professor Weldon's contribution invites the same criticism of sailing under false colors, but with a kind of perversity illustrates scientific method better perhaps than any other lecture in the volume. Inheritance in plants and animals is his announced theme. He says, however, practically nothing about it. Instead he expounds the method of statistics as illustrated in measuring the latitude of the Radcliffe Observatory, in determining the weight of oxygen and nitrogen, and in the throwing of dice. A single paragraph toward the close of the lecture states Pearson's result from applying the same method to determine the regression between parent and child as illustrated by the relation between breadth of span in mothers and in daughters. But we have a genuine discussion of scientific method concretely illustrated. It is doubtful whether the discussion does much to clarify the method, but it produces the conviction that the scientist has at his command the means of bringing extremely variable phenomena within the domain of measurement.

Perhaps it was the feeling that the term 'psychophysical method' is a misnomer that led Professor McDougall to devote his lecture to a consideration of psychophysical science in general, its relation to its allied sciences and to an illustration of the way the psychologist has met the difficulties encountered in determining the action-time of light. This illustration, which is worked out with admirable brevity and clearness, together with an equally excellent exposition of Fechner's conception of the requirements of psychophysical science, can not fail to give the reader a lively appreciation of the complexity of the problems with which the experimental psychologist has to deal and of the means he has employed. A region of investigation is thereby determined, but not a peculiar method which should bear the name 'psychophysical.' The methods employed are common to all workers in science. The problem only is distinctive.

Yet the lecture admirably illustrates the way the scientist by the use of experiments can disentangle factors which appear to be inextricably interwoven. It exhibits the method of experimental analysis in operation. Although the method receives no general formulation, it was doubtless worth while to behold it concretely at work in one of the more recent departments of research.

A result similar to Professor McDougall's has been achieved by Dr. Fison in his lecture on the evolution of double stars. It is a highly interesting and instructive lecture. Indeed the part played by the investigation of double stars in forming our general conception of stellar evolution is so admirably told that the problem of method is obscured by the beauty of the result. Yet the lecture merits study because of the richness with which it illustrates the method of employing the mechanics of fluids in the interpretation of celestial phenomena. Perhaps no department of science can offer more striking instances than that from which Dr. Fison has drawn of the transition from experiment to generalization in a new region and back again to experiment. Here we find at once the familiar and the powerful procedure of science. The familiar operations of ordinary things once formulated in mechanical terms become themselves instruments for analysis as powerful as the more material tools and devices to be found in any laboratory.

In Sir Richard Temple's lecture on the evolution of currency and coinage as an illustration from the science of anthropology, the question of method is once more lost—and this time entirely—in subject-matter. To be sure, we are told that the evolution exhibits the 'constant nature of human reasoning' and the 'law of contact' which is 'the fundamental law to be observed in all anthropological research.' The bearing of these considerations on scientific method is not obvious.

Professor Petrie in discussing the types of evidence with which the archeologist deals approaches once more the general theme of the course. For evidence is a device to make inferences easy and obvious. The four types of evidence noted—witnesses, material facts, exhaustion, probability—are illustrated in the realm of law and parallels drawn in the realm of archeology. Certain factors which tend to corrupt evidence are noted, but there is little suggestion of a genuine methodology.

Dr. Strong in the closing lecture considers, first, the 'form of the historical statement and the historical question,' and, secondly, 'our mental attitudes towards historical statements.' The reader has once more his general question put to this particular case: How do such considerations illustrate the scientific method as applied to history? There is some examination of the general problem of evidence, and Dr. Strong distinctly opened the way for a discussion of general methods in specific application by distinguishing historical facts from those of physical science. The former belong to the class of facts which are unique and occur once, the latter to the class that are general and can be repeated. The historian's problem, according to Dr. Strong, is thus so to reconstruct the setting of the unique fact he is studying that this fact will appear rigidly placed. How this can best be done was worth more de-

tailed consideration than is here given to it, or might have been illustrated by concrete examples. Criticism of Dr. Strong should, however, accept his own view of the peculiar difficulties of his task: "This task appears to me difficult because, while much is said nowadays of the importance of a scientific conception of history, I do not think there is anything like the same agreement about the character of scientific history as exists in the case of most other sciences."

"The course as delivered in Oxford was received with great satisfaction." So we are told. There can be little doubt of it. One can readily believe that the audience remained in generous attendance to the end. But it is hard to believe that they were much enlightened on the method of science.

FREDERICK J. E. WOODBRIDGE.

COLUMBIA UNIVERSITY.

Essay on the Creative Imagination. TH. RIBOT. Translated from the French by ALBERT H. N. BARON, Fellow in Clark University. Chicago: The Open Court Publishing Co.; London: Kegan Paul, Trench, Trübner & Co. 1906. Pp. xix + 370.

Mr. Baron has done us a service of some value in rendering into English M. Ribot's monograph on the creative imagination. The translation sticks somewhat closely to the original idiom, but this is a virtue rather than a fault. The book is neatly gotten up, well printed, with a good index. It forms a valuable addition to the psychological literature on imagination, and it is to be hoped that some of the other French monographs on kindred topics will receive a similarly respectable English dress. It is strange that some of the recent French monographs on attention, will, etc., should have been prepared in English, and then been done into French. This, however, is by the way.

I shall by no means attempt to give an adequate account of the contents of the book. As it has been translated into English, it is accessible to any one choosing to look up the subject further. In the following remarks I shall try rather to call attention to the striking features which are in evidence.

As the title indicates, the subject is restricted to 'Creative Imagination.' No discussion in full of memory or association is to be expected. But imagination as it is usually understood is treated in full. As M. Ribot insists, creative imagination is something more than reproductive imagination, or memory. "In imaginative creation we have several co-operating images, with combinations, coordination, arrangement, grouping" (p. 8). After having defined the subject, M. Ribot proceeds to discuss imagination under the following heads: Analysis of the Imagination, Development of the Imagination, Types of Imagination, Conclusion and Appendices.

Analysis.—As regards its intellectual aspects, imagination presupposes a negative operation, dissociation, and a positive operation, association. In the process of dissolution images may become incomplete, schematic, or they may remain more or less complete. In the association of such

images, the laws of contiguity (or continuity) and similarity operate, each having a specific method of its own. As a special form of resemblance, analogy is most in evidence in the processes of creative imagination. As regards the emotional factor, "all forms of creative imagination imply elements of feeling. . . . All invention presupposes a want, a craving, a tendency, an unsatisfied impulse, often a state of gestation full of discomfort" (p. 32). This impulse then takes a more or less definite form under guidance of a series of images. An unconscious factor exists in what is usually termed 'inspiration.' By association, mediate or otherwise, some form, complex or series of images is evolved, and flashes upon consciousness. But M. Ribot insists that such a state can not follow from any mental vacuum, but is rather the result of long and profound mental activity.

Development.—In the second section of the book development of creative imagination is taken up in a treatment of imagination (1) in animals, (2) in the child, (3) in primitive man and myth creation, and (4) in the higher forms of invention. A good idea of M. Ribot's full discussion of these topics may be had by reading carefully Chapters I. to IV. of the second part of the book.

Types.—The chief types of creative imagination M. Ribot finds in the plastic imagination, the diffuent imagination, the mystic imagination, the scientific imagination, the practical-mechanical imagination, the commercial imagination, and the utopian imagination. M. Ribot uses the term 'plastic' in a manner somewhat different from that of Professor Baldwin. M. Ribot considers plastic imagination that which makes use of clear images well defined in space, and guided by objective associations. It is used chiefly in arts dealing with form, as in poetry, myths and mechanical inventions. The diffuent imagination makes use of vague images loosely connected by association. It is manifested in revery, romantic dreaming, religious conceptions, literature and the fine arts. The mystic imagination is concerned chiefly with symbols, and exists in religion and metaphysics. The scientific imagination is most exacting since it must represent 'not only the elements of the past and the present, but in addition construct a picture of the future according to probable inductions and deductions' (p. 238). In addition a rigorous use of reason is necessary to give method to chains of images. "It is the imagination that invents, that provides the rational faculties with their materials, with the position and even the solution of their problems. Reason is only a means for control and proof; it transforms the work of imagination into acceptable, logical results" (p. 243). The practical and mechanical imagination gives rise to invention, the commercial imagination deals with schematic images, while the utopian is concerned with social and ethical problems.

Almost too sketchily have I given some of the features of the book. I have omitted almost entirely any mention of M. Ribot's excellent treatment of invention, of the organic conditions of imagination, of the principle of unity, and of the appendices and conclusion.

Underlying the entire discussion of imagination are the following

sound principles, as emphasized by the author: (1) In invention and creative imagination there is no general faculty. Only specific genius is possible as shown in stated instances. (2) Special conditions determine to a great extent the progress possible, and the validity of imaginative creations. (3) Imagination is not a power *in abstracto*, but is simply the interplay of material peripherally acquired, because of emotional impulsion.

As I have said above, it is impossible in this review to do more than suggest the method of treatment pursued by the author. The full explanation is to be found in the book itself, which is now accessible to all through the translation of Mr. Baron.

FELIX ARNOLD.

NEW YORK CITY.

JOURNALS AND NEW BOOKS

THE AMERICAN JOURNAL OF PSYCHOLOGY. July, 1906, Vol. XVII., No. 3. *The Psychology of Organic Movements* (pp. 293-305): I. MADISON BENTLEY. - A critical survey of the recent tendencies in psychology to emphasize the motor side of consciousness, and a warning against the danger of making some aspect of it, *e. g.*, attention, the vague all-explaining entity that the conception of soul formerly was. *The Habits, Instincts and Mental Power of Spiders, Genera Argiope and Epeira* (pp. 306-357): JAMES P. PORTER. - The main point brought out by this study is the variability of the instincts of spiders. This is probably the basis for the development of new species, and possibly the starting-point for the development of intelligent action. *A Study of the Affective Qualities. I. The Tridimensional Theory of Feeling* (pp. 358-393): SAMUEL PERKINS HAYES. - The experiments made give no evidence for the tridimensional theory of feeling advanced by Wundt, but support the dual theory in its traditional form. *Accuracy in Handwriting as Related to School Intelligence and Sex* (pp. 394-405): ARNOLD L. GESELL. - Accuracy in handwriting is found to vary directly as school intelligence, and hence forms a very convenient test in the elementary schools. *The Effect of Music on Thoracic Breathing* (pp. 406-414): EUGENIA FOSTER and E. A. McC. GAMBLE. - Music (1) tends to make breathing faster and shallower; (2) has no effect on the regularity of breathing; (3) no pronounced differences shown between the effects of loud and soft and major and minor music. *Psychological Literature. Book Notes.*

Davidson, Thomas. *The Philosophy of Goethe's Faust*. Six lectures delivered in the winter of 1896 at Cambridge, Mass. Edited by Charles M. Bakewell. Boston: Ginn & Co. 1906. Pp. iv + 158. \$0.60 net.

Fournier, E. E. *The Electron Theory*. London: Longmans, Green & Co. 1906. 5s.

Hobhouse, L. T. *Morals in Evolution*. Two volumes. London: Chapman & Hall. 1906. 21s.

- MacColl, Hugh. *Symbolic Logic*. London: Longmans, Green & Co. 1906. Pp. xi + 141. 4s. 6d.
- Macleane, Douglas. *Reason, Thought and Language; or the Many and the One*. London: Oxford University Press. 1906. 15s.
- Morgan, C. Lloyd. *The Interpretation of Nature*. New York: G. P. Putnam's Sons. 1906. \$1.25.

NOTES AND NEWS

At the meeting of the Aristotelian Society on November 8, the president, Dr. Hastings Rashdall, delivered the inaugural address, on 'Nicholas de Ultricuria, a Medieval Hume,' of which the following summary is taken from the *Athenæum*: "Dr. Rashdall began by suggesting that current impressions of medieval philosophy did scant justice to the originality and independence of the speculation which prevailed in the medieval schools, partly because the most famous doctors were the accepted theologians of the regular orders. These had exceptional facilities for getting their works diffused, read and taught throughout Europe, and eventually printed in massive folios, while the secular teachers were forgotten. In the case of the more unorthodox, successful persecution had so completely doomed their ideas to oblivion that their very names are hardly mentioned by historians of philosophy. A remarkable instance of this process is supplied by the fate of Nicholas de Ultricuria (of Autricourt, now Avricourt), of whose works nothing remains but two letters and the propositions which in 1346 he was compelled to retract. Yet the leading opinions of Berkeley and Hume were all anticipated by this fourteenth-century schoolman. Among the condemned theses (now published in Denifle and Chatelain's magnificent 'Chartularium Universitatis Parisiensis') the following were some of the most notable: 'Of the existence of material substance other than our own soul we have no evident certainty'; 'we do not know for certain that things other than God can be the cause of any effect'; 'we do not know evidently that any cause but God can exercise efficient causality.' He doubted, in short, the existence of matter, the existence of the self except as an effect of divine causality, the existence of any self-evident or *a priori* truth, the necessity of the causal nexus and the validity of any inferences based thereupon. In some ways his scepticism went beyond that of Hume himself: it reached its climax in the assertion that the only thing we can be certain of is, 'If something is, something is.' Nicholas represented, Dr. Rashdall thought, an extreme development of the empiricism of Occam, though his determinism was no doubt due to the influence of Bradwardine. In spite of all his scepticism, there was no reason to doubt that he was quite sincere in his Theism and his Christianity. What his speculation probably meant was that faith must be substituted for knowl-

edge as the basis of religious belief; yet he was not a mere spinner of ingenious metaphysical cobwebs, but a real thinker who had fairly entered upon the line of speculation ending in the doubts which, in the form given to them by Berkeley and Hume, all modern philosophy has been engaged either in meeting or confirming."

HENRY C. BROCKMEYER, who died in St. Louis on July 26 last, at the age of nearly eighty, was a noteworthy figure in the intellectual history of America as the first of the American Hegelians and the founder, in this country, of the systematic study of German philosophy. A native of Prussia, he came to America at sixteen, studied for a time in Georgetown College and in Brown University, settled in St. Louis, and, while employed as a moulder in an iron foundry there, in 1858, gathered about him a group of young men who began with him a careful study of the systems of Kant and Hegel. From this group, of whom William T. Harris was one, sprang the whole Hegelian movement of which St. Louis was the center. Mr. Brockmeyer was the first president of the St. Louis Philosophical Society (1866), which in 1867 began the publication, under Dr. Harris's editorship, of the first philosophical periodical on this side of the Atlantic—the *Journal of Speculative Philosophy*. To this Mr. Brockmeyer contributed two series of 'Letters on Faust' and (with Dr. Harris) a translation of Hegel's 'Phenomenology.' Combining in an exceptional manner practical force with speculative interests, Mr. Brockmeyer played an historic part in maintaining public order in an out-of-the-way section of Missouri during the Civil War, and after 1870 was active in political affairs. He had the principal part in the framing of the Missouri constitution of 1875; and in 1876 was elected lieutenant governor of the state. Dr. Harris once wrote of him: "Mr. Brockmeyer was a thinker of the same order of mind as Hegel, and even before reading Hegel, except a few pages in Hedges's 'German Prose Writers,' had divined Hegel's chief ideas and the position of his system." Mr. Brockmeyer left in manuscript at his death a complete English translation of Hegel's 'Greater Logic'; it is hoped that means may be found for its publication.

THE Philosophical Union of the University of California has been carrying on for the past year a series of studies introductory to the philosophy of religion, the success of which in awakening interest has been such as to determine the union to continue its work in this field during the present year. Professor McTaggart's 'Some Dogmas of Religion' has been chosen as the basis of discussion. At each meeting a paper will be presented, to be followed immediately by discussion which shall be opened by an appointed leader. Attendance at these meetings is not limited to members. The following program is announced: November 23, 'The Necessity and Ground of Dogma,' Professor C. H. Rieber; December 14, 'Free Will,' Rev. R. P. Shepard; January 27, 'Human Immortality,' Dr. F. L. Wrinch; February 15, 'Human Preexistence,' Professor G. H. Howison; March 29, 'God as Omnipotent,' Dr. M. E. Blanchard; April 26, 'God as Non-Omnipotent,' Professor J. W. Buck-

ham; May 10, 'Theism and Happiness,' Dr. W. E. Hocking. Professor McTaggart will make the annual public address on August 23.

THE anthropological and psychological sections of the New York Academy of Sciences met on November 26. The afternoon session was in the psychological laboratory of Columbia University, and the program was as follows: 'Linguistic Ability and Intellectual Efficiency,' Dr. F. Lyman Wells; 'Esthetics of Simple Color-arrangements,' Dr. Kate Gordon; 'Gustatory Audition,' Professor A. H. Pierce; 'The Pendular Whiplash Illusion of Motion,' Dr. Harvey Carr. At the evening session, held at the American Museum of Natural History, the following papers were read: 'Imaginative Thought as Adaptive Response,' Professor Robert MacDougall; 'Psychology and Spelling,' Brother Chrysostom; 'Knowledge and Judgment,' John Dewey.

Cænobium, Revue internationale de libres études is the name of a new journal for the promotion of liberal and speculative interests, to be published at Lugano, under the direction of Signore Giuseppe Rensi. The managers find their opportunity in the present shifting of metaphysical attitudes, and hope to contribute to the coming readjustments in philosophy. It is not intended that *Cænobium* shall favor one philosophical position more than another.

ANOTHER new periodical in the field of philosophy is the *Rivista Rosminiana*, of which the first number appeared in July. Unlike *Cænobium*, the *Rivista Rosminiana* will champion a particular line of philosophy, namely 'spiritualismo cristiano,' of which Rosmini was one of the most distinguished representatives. The first article, 'La Filosofia dell'azione e l'apologetica moderna,' is a study of pragmatism, with special reference to the theories of James. The *Rivista* is published at Lodi, and edited by Professor Giuseppe Morando.

THE American Philosophical Association, Professor William James, president, Professor John Grier Hibben, secretary, and the American Psychological Association, Professor James R. Angell, president, Professor William Harper Davis, secretary, will meet December 27-28, in connection with the meeting of the American Association for the Advancement of Science, in New York City.

THE second meeting of the Southern Society for Philosophy and Psychology will be held in Montgomery, Alabama, in connection with the Southern Educational Association, December 27-29.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

IMAGELESS THOUGHT

IT would be hard to find a better proof of individual differences than is afforded by the answers of people to the question whether thought can go on without sensorial images. Some will see nothing absurd in the notion and will be inclined to believe that it corresponds to the facts; others will answer with a decided affirmative; while others will regard the questioner as joking or as badly muddled. They can not imagine what you are talking about; thought without images seems to them an absolute absurdity; at most they will concede that perhaps you think in that way, but as for them they are sure they never do so. The same differences appear in the literature. While some authors, Stout,¹ Binet,² and recently Bühler,³ boldly assert the existence of imageless thought, and while Watt,⁴ Messer⁵ and others have no qualms in recording cases in which introspection failed to reveal imagery, on the other hand, Angell,⁶ for one, has repeatedly attacked the notion of imageless thought with such vigor as to make clear the existence of a powerful opposition to its introduction into psychology—an intro-

¹ 'Analytic Psychology,' 1896, Vol. I., pp. 78-96.

² 'L'étude expérimentale de l'intelligence,' 1903, pp. 81-108.

³ Bühler's work is as yet accessible only in the very brief report of his paper before the second *Kongress für experimentellen Psychologie*, contained in the *Archiv für die gesamte Psychologie*, 1906, Vol. 8, p. 239. As his observations and conclusions are almost identical with mine, I quote here a portion of this report: "Er zeigte an der Hand seiner Versuchsprotocolle, dass alle Vorstellungen, auch die Wortvorstellungen, für den Verlauf wirklich complizierter Denktätigkeit nur ein Accidens bedeuten, das wegfallen könne, ohne dass die Bestimmtheit, Richtigkeit und Fruchtbarkeit des Denkens dadurch wesentlich geschädigt wird." "Diese qualitativ nicht weiter zu beschreibenden, aber vollkommen eindeutig gewissen Wissensgebieten zugeordneten psychischen Zustände, die man nach Binet's Terminologie auch Gedanken nennen könne, seien die Elemente des Denkens."

⁴ *Archiv für die gesamte Psychologie*, 1906, Vol. 4, especially pp. 316-320.

⁵ *Ibid.*, 1906, Vol. 8, pp. 1-224.

⁶ *Philosophical Review*, 1897, Vol. 6, pp. 646-651; this JOURNAL, Vol. III., No. 23.

duction which would go far to complete the important reform in descriptive psychology begun by Galton with his discovery of the almost complete absence of visual imagery from the experience of many persons, and continued by James with his emphasis on the non-sensorial feelings of relation, tendency and meaning, and by Külpe with his insistence on the inaccuracy of images and on their absence from certain types of recognitive and discriminative processes.

In a recent study⁷ of the 'Cause of a Voluntary Movement,' I found, from introspections made under experimental conditions, that in many cases the imagery present in consciousness did not exhaust the content of consciousness. Sometimes the subject, though clearly aware of the movement he was about to make, denied that he had any visual, kinesthetic, verbal or other image of it. His thought of the movement was perfectly definite and 'focal,' whereas whatever imagery may have been present at the moment was so 'marginal' and vague as to escape detection. And where imagery was present, it was often so inadequate to identify the movement, which was actually identified by thought, as to be certainly incidental and not essential to the process. I was thus led to make the statement that imagery, when present, was but the clothing of the thought, and that a naked thought was fully capable of doing the work. Professor Angell, in reviewing⁸ my article, has sharply criticized the notion of a naked or imageless thought, speaking of it as 'a logical abstraction finding no real psychological basis in a careful examination of consciousness,' and as 'based on a radically erroneous identification of the meaning, or cognitively dynamic, aspect of all thoughts, with a distinct psychic entity.'

Imageless thought, whatever else may be urged against it, is not a logical abstraction. It is an apparent fact of introspection. Its opponents, rather than its supporters, appeal to logical deduction in defense of their position; for whereas its supporters point to the concrete instances of its occurrence, its opponents urge that there *must be* in such instances some carelessness of observation, for thought simply *can not* go on without images. A universal negative, such as Angell's statement that 'there is no mental state wholly devoid of all sensuous content,' is much more likely to owe its acceptance to logical deduction than is a particular affirmative, such as the statement that cases of imageless thought have been observed. Perhaps the universal negative is deduced from the fact of the continuous stimulation of the sense organs, and means simply that in view of this fact sensuous content can hardly be absent from any

⁷In 'Studies in Philosophy and Psychology. A Commemorative Volume by Former Students of Charles Edward Garman,' 1906, pp. 351-392.

⁸This JOURNAL, *loc. cit.*

moment of conscious life. If this were the point of Professor Angell's criticism, there would be no serious difference between us. I should, indeed, insist that such sensory content does not always lie in the field of attention, and that at times it is so marginal as to elude introspection. But principally I should insist that something else does often lie in the field of attention, that, in short, there is non-sensuous content, and that in many cases it is descriptively as well as dynamically the most important component of thought.

This, as I understand it, the opponents of imageless thought do not admit. Professor Angell writes in his 'Psychology': "The content of our thought is, so far at least as concerns the knowledge process, always made up of imagery." The existence of non-sensuous content is the real bone of contention.

How shall we attempt to come to agreement? The direct method would be to do as we would in a case of sensation. We should place ourselves in the same situation and observe the consciousness that results. In view of individual differences in imagery, this method is not likely to lead to complete agreement, but it should at least be given a fair trial. An indirect method is to examine the imagery and other sensorial content of a thought and notice whether it gives a sufficient account of the thought as experienced.

For applying the direct method, the essential thing is to catch one's self at a moment of active thought, and observe what content is there. According to my experience, the more effective the thinking process is at any moment, the more likely is imageless thought to be detected, provided only one introspects, which is not apt to be the case at such moments. An actual experiment is usually necessary. The experimenter sets some problem, which the subject is to solve promptly.⁹ As soon as the solution is reached—or even before—the experimenter interrupts the further course of the subject's thought, and calls for a description of the process of seeking and finding the solution. The introspection may be made more reliable by calling for answers to very definite questions, as: Any visual picture? Any words heard? Any feeling of bodily movement? The question should be varied in successive trials, as the constant calling for one sort of imagery may cause attention to be set beforehand in its direction—a very good way of stimulating it. What should be stimulated is the solution of the problem, and the latter should, therefore, be hard enough to call for real thought. When it is too easy, the answer may come almost automatically, and consciousness seem blank, save for the sound of the words employed.¹⁰ As samples of

⁹ See Binet, Watt, Messer, *op. cit.*

¹⁰ See Marbe. 'Experimentell-psychologische Untersuchungen über das Urteil,' Leipzig, 1901.

the problems that have been so far used with some success may be cited the finding of a word having the opposite meaning to that of a given word, finding the genus of which a species is named; or as answering such questions as: Which is more delightful, the smell of a rose or its appearance? Who was the greatest patriot of Hungary? What is the difference between similarity and congruity? Should a man be allowed to marry his widow's sister? With some subjects, almost any problem will serve to arouse imageless thought, while with others some skirmishing is necessary, and with one I have not as yet got a single clearly positive case.

A few instances may be cited. First, one from a subject who usually, perhaps four fifths of the time, reports visual or verbal imagery at moments of effective thinking. To the question, What substances are more costly than gold? she answered promptly, "Diamonds," and reported as follows: "I had no visual image of the diamond; the thought of diamonds was there before the sound of the word. You don't think of the words you are going to say before you say them. It is the same way in conversation: you know what you want to say, but the words come so quickly that you don't have a chance to think of them before you say them."

Next an instance—the best I have so far—from a subject whose imagery is very exuberant and who is almost or quite never without some. In answering the question, Is it ever right to imprison an innocent man? he had visual imagery of the inside and outside of prisons, and 'very dim imagery of what innocence and guilt involved, with perhaps some images of books on the subject that I have read.'

The following instances are from my own introspection. I introduce them for two reasons: because of my meager imagery and because, since becoming interested in the problem, I have sought to catch myself at the moments of most effective thought, and have succeeded a number of times, with always the same result—clear consciousness of a particular thought, and no images.

I quote from my notes made at the time: "I was trying the experiment of naming, in response to a seen word, a coordinate concept, i. e., one subsumed under the same higher concept. On seeing *noble*, I thought of *grand*, but was impressed with the fact that this was not a good response, as the two words were simply synonyms. Next read *origin* and responded automatically with *development*, being, however, clear of the appropriateness of this response, though having no image of the 'higher concept.' Next read *vicinity* and responded first with *neighborhood*, but was immediately conscious that this again was merely a synonym; I was not, however, conscious of the word 'synonym' nor of any other imagery. I caught this moment of consciousness on the wing and am sure of its content.

The consciousness of synonymousness and of its inappropriateness was clearly present, without any detectable image."

Another instance from my own notes: "While reading, I heard some one playing on the piano a piece which I felt at once to be familiar, but which I did not at first identify. My first attempt at identification was felt to be wrong, and immediately afterward I identified it properly and with confidence. In doing so I thought of the first part of the piece (it was Chopin's funeral march, and the part being played when it caught my attention was the trio). Resting satisfied with my identification, I was about to turn to other things, when it occurred to me to ask whether, in identifying the piece, I had had its name present in the form of verbal imagery, and I found that I certainly had not; in fact, it required a moment's further thought to recall the sound of the composer's name and the name of the piece. Nor, in locating the trio as a trio and thinking of the character of the march proper, did I have an auditory image of the march. I regard the example as a good one, since the thought was perfectly overt, conscious and definite, though it not only began but was completed without any image."

Another instance occurred while I was reading a psychological book in a foreign language. In a certain sentence occurred a word which was entirely unfamiliar, and which did not by its form suggest its meaning. On rereading the sentence, however, I suddenly saw the meaning from the context; yet no English or other equivalent suggested itself till distinctly later. In general, I may add, my visual imagery is practically *nil*; auditory imagery alone is detectable, being strong and usually present, in the form of speech or music or both together. Yet the speech often halts; the words lag behind the thought, and the phrases are left incomplete by the turning of thought to something else. When thought is slow, repetitious, automatic, the verbal imagery is prominent; I then think in words. But at moments when thought is really effective, when some new insight is gained, the words are absent, though they soon come tagging after. It would not be fair to call these moments pale and featureless; they are precisely the moments when a thought presents itself most definitely for what it is. Nor would it be quite fair to call them *transitive*; though *brief*, they are the real *high lights* of consciousness.

It seems impossible to describe these facts without admitting the existence of other than sensorial contents of consciousness. I would suggest that in addition to sensorial elements, thought contains elements which are wholly irreducible to sensory terms. Each such element is *sui generis*, being nothing else than the particular feeling of the thought in question. Each is a quality, as red and sweet are qualities; not syntheses of sensory qualities, but simply and purely

the qualities of particular thoughts. They are not to be elevated, as 'activities,' into another dimension of existence; they lie in the plane of content. There is a specific and unanalyzable conscious quale for every individual and general notion, for every judgment and supposition. These qualities recur in the same sense as red and other sensory qualities recur.

For those who do not get positive results by the direct method of looking for these non-sensorial elements of thought, there still remains the indirect method which examines whether the imagery present in a thought is an adequate account of the contents of the thought as felt. I can only briefly indicate the line of the argument. The imagery detected is often vague when the thought is definite; marginal when the thought is focal; or irrelevant. Therefore there is something present besides the image. Verbal imagery, as mere sound or feeling of vocal movement, clearly can not exhaust the feeling of a thought, for only by conventional association have the images any connection with particular thoughts; unless the associates are present the words are empty. Words attended to as sounds are different from words understood. Not only are they 'dynamically' different; they *feel* differently. Yet it will be admitted that in many persons no further image need be present. Visual imagery when present is often irrelevant. The following is a comparatively mild case of irrelevance. The subject who in my experiments has so far never given a case of imageless thought was asked: Is Christian Science better as a religion or as a means of healing? He reported visual images of Christian Science churches and of the outside of a book on the subject which he had read; also auditory images of the words 'suggestion' and of his answer, "Religion, because less harm." These images have more the appearance of sparks struck off by thought in its progress than of thought itself. Either the thought was unconscious, or else something more was present in consciousness.

The common escape of the sensationalist from this dilemma is to appeal to the 'meaning' of the image; which is sharply distinguished from the conscious content. Two thoughts may be alike in content but differ in meaning, as when the same verbal or visual image 'man' means now an individual and again the species. This is surely a subterfuge, since the meaning that is referred to is conscious meaning. As Bradley has said:¹¹ "It is not wholly true that 'ideas are not what they mean,' for if their meaning is *not* psychical fact, I should like to know how and where it exists." To call meaning the 'cognitively dynamic aspect of all thoughts' is no less a subterfuge; for meaning is not an external aspect, visible only to an outside observer, but a felt aspect. Is not everything that is felt a psychic

¹¹ 'Appearance and Reality,' 1893, p. 51.

entity? And if, besides the sensory content, another 'aspect' is felt, is there not other than sensory content?

Meanings enter into the associative network on the same plane as images. An image may call up a meaning, and a meaning may equally well call up an image. The two classes of mental contents differ in quality, as red differs from cold, or anger from middle *C*; they may also differ in importance for the purposes of a given thought; otherwise, it is hard to see any essential psychological difference between them.

Meaning is not simply 'an aspect of all thoughts'; we do not 'mean' in general, but have in each case a particular meaning. When two thoughts have the same imagery but differ in meaning, to appeal to an aspect of all thoughts does not help in explaining their difference. It is not so much the common properties of all thoughts as the peculiarities of single thoughts that can not be described in terms of sensuous imagery.

Meaning is often treated as a mere relation between an image and the object to which it refers. The meaning is regarded as inhering in or attached to the image; and a meaning without some image would be a relation without one of its terms, and therefore an absurdity. This conception of meaning is certainly derived from logical construction or analogy, and not from introspective analysis. Meaning is not felt as the relation between an image and an object, but as the *thought of the object*. When I think of Cuba and have the verbal image of the name present, my meaning is not felt as a relation between the verbal image and the island; I mean the island itself. If the meaning is defined as the relation between the image and the object, the thought of the object remains still to be taken into account. The thought of the object is not the image, for the image may change while the same object is thought of; nor is it a mere relation. It is as substantial an element of thought as the image, and there is no absurdity in the notion that it may be present alone.

So far from leading to the view that images plus sensations exhaust the content of a thought, or serve as the bearer of the meaning, the introspective results tend to show that they are often associative byplay. Since individuals differ in the vividness and readiness of their imagery, we should expect that thought would clothe itself in sensuous form in some persons much more than in others. Individuals with sluggish imagery have the better chance of observing thought without images, and so of becoming directly aware of the existence of non-sensorial elements of thought. It is scarcely probable that individuals differ so markedly as that one thinks in terms of meanings while another thinks in images. It is more likely that

all think in terms of meanings, but that in consequence of differences in the excitability of the sensorial elements, some have a more continuous and vivid byplay of imagery than others.

R. S. WOODWORTH.

COLUMBIA UNIVERSITY.

SNAP SHOT OF A DREAM DRAMA

IT was J. S. Mill, I believe, who said that one fact would be enough to establish an induction if that fact were sufficiently *significant*. Whatever the true theory of scientific method and logical process, there seems to be little doubt in the minds of many psychologists that our science needs significant facts, carefully studied, fresh and vital facts, more than merely numerous data ill understood and lacking in suggestiveness. True, a fact is a fact, and therefore a thing to be duly thankful for, but to the gathering of many facts (with little 'muchness' in them) there is no end, and the mere brutish massiveness of them is a weariness to the flesh and still more fatiguing to the spirit. Indeed, much of our psychology resembles a field of scrap-piles, chaotic when not put in order and inorganic when ordered. Now if the flower in the crannied wall is full of significance, how much the more is a warm, fresh, faithful transcript from vivid experience!

In a previous number of this JOURNAL¹ I gave a faithful copy of what we might call a 'snap shot of a *reciprocal association series*,' and the following brief study of another very recent experience might analogously be dubbed a 'snap shot of an univocal *dissociation series*.' For in the dream complex I am about to describe there is a curious blending of self-continuity and dissociated states and attitudes.

I

Scene 1. Precordial anxiety, a sense of suffocation, great muscular tension. The victim feels that something terrible has happened or is about to happen to him. He is about to scream and struggle. Is conscious of his sensations and strives, at first without success, to comprehend them. He is dimly aware that he must 'find out what is the matter with him.' He is conscious of the tendency to resist the coming on of it, whatever 'it' may be. His causal instinct seems inclined to work, but is strangely impeded.

Scene 2. Enter the dream psychologist. He studies the case of the patient—*himself*! He watches 'it' wearily drag itself to its bed, its frame shaken with shuddering sobs that can not be controlled. He seems to sympathize with the sufferer in an aloof and disinter-

¹ Vol. III., No. 16.

ested fashion. The dream psychologist does not seem to see his patient and the surroundings in any distinct fashion, but gets a moving picture of the sufferer crawling into bed. No recognition of features, nor of the bed and its surroundings, but an acute perception of the shuddering, sighing sobs, which are, nevertheless, projected into the dimly seen white-robed patient.

Scene 3. The dream psychologist seems to lose track of the patient as a present reality, but reflectively and retrospectively, and apparently in the presence of other 'persons,' says in a professionally nonchalant way: "Just an acute attack of hysteria!" Exit dream psychologist.

Scene 4. Enter self-conscious but drowsy psychologist, who soliloquizes thus: "Well, this is rather an extraordinary dream for a man who seldom has clear recollections of his dreams. Looks like a case of divided consciousness. I certainly *was* that sufferer, and quite as certainly I *was* that dream psychologist, and most certainly I am neither of them *now*. But I am aware of lying in a cramped position; the covering is partly over my face; I certainly have an attack of indigestion, accompanied by costiveness, flatulency and some abdominal tenderness. Perhaps this thing is partly due to my cold, which has freshened up. Possibly the rhinitis tablets I took have had something to do with it.—Hello! that's interesting!—why the end of one of my fingers that is pressed down on my thigh is cold, whereas it ought to be warm. I take the finger away, but the abnormal sensation continues—now it's fading away!"

Scene 5. Wide-awake psychologist enters. He is anxious to keep a vivid remembrance of his curious dream-experiences, so cons over the events again and again while they are fresh in his mind. Finally becomes convinced that he has secured a snap shot that is 'true to life.' Being interested in thinking over the episode, he discovers several other slight sensorial abnormalities, which tend to disappear as he becomes wider and wider awake—for the dawning of the day is a coming. He notes that he sees faint streaks of light which disappear when he opens his eyes. Perhaps the very faint light at the windows has reenforced the retinal light. Finally he notes very decided sensations of smell and convinces himself that they have no externally objective bases; but his cold and the treatment with the belladonna, quinine and camphor contained in the tablets may furnish an explanation.

Scene 6. The alarm clock goes off and the must-get-up psychologist feels the burring of the clock 'all over,' and realizes that had it come while the nightmare was threatening, the dream consequences might have been tragic.

II

The dream episode speaks for itself, but I should like to relate it to a general psychological scheme. In the previously mentioned study of an association series, the mechanism of mental images was conspicuous and the feeling aspects almost *nil*; here, on the contrary, there is little conspicuous imagery, and phenomena of feeling and their relation to 'self' are evident. Beginning with a sort of instinctive conglomerate of feeling (basal ganglia?), the dream consciousness gradually approaches the waking state, through the medium of a higher dream-self which indulges in a quasi professional form of judgment based on mental habit. In all this the stratification of consciousness seems evident, and yet along with evident dissociation goes the apperception of the lower consciousness by the higher, and of the higher by the highest. I now proceed to take up the dream movements and subject them to analysis.

1. All the groups of *sensation* material are present—the specific sensations, the organic sensations, the muscular sensations. That is, the crude, diffused, unperceptual sensation stuffs of these three orders evidently have their share in the incipient nightmare, and are on the point of being organized into feeling-complexes relationally ordered.

For some years the concept 'esthesia,' or 'esthesis,' has had a sort of attic room in psychology. Now I do not propose to give it a better room, but would suggest that the room be better furnished. So I shall use the term 'kinesthesia' for that diffused sensation-feeling due to variations in muscular tonicity; 'cœnesthesis' for the sea of undifferentiated organic 'tone'; and, finally, 'somesthesia' for the *melange* of sensibility due to the fusion of currents coming from low-tension ('tonal') functioning of the specific-sensation centers. There will hardly be any dispute about the first two names. At least they will probably be tolerated. But is not the evidence for diffused awareness, subconscious alertness, quite as strong as for the 'tonicity' of muscle and viscus? If touch be accepted as the mother sense, we may call the somesthesia a diffused 'touchiness.' If this distinction be accepted, we can account for the abnormalities of sensation of the special senses noted by the drowsy and the wide-awake psychologists. For synthetic attention leads to discrimination of the separate sensations from the general wave of sensation-feeling consciousness, the somesthesia. However, adequate discussion of this point must wait.

2. I have already called attention to the '*continuity-discontinuity*' phenomena of this case. The higher synthesis of the wide-awake self exhibits the identity-with-difference that proceeds from the *relating*

activity of the self egoistically directed. Then, too, in the sympathy of the dream psychologist for his patient we have the 'community relation' acting. Finally, in the judgment of the dream diagnostician (similarity-difference) we have an example of the work done by *congruity* relations.*

3. The presence of *impulsive* phases of consciousness is shown by the tendencies of the lowest dream self to scream and move, by the diagnostic tendency of the higher dream consciousness, and by the analytic tendency of the almost awake self. In other words, 'mental activity' is in evidence throughout the series of ascending states of mind. Possibly the tendency experiences were due in part to the subconscious auditory sensations initiated by the fierce gusts of the east wind at the time.

4. *Feeling*. One of the leading classifications of the 'directions' of feeling is that of Wundt: (1) exaltation and depression; (2) tension and relaxation; (3) pleasure and pain. With this may be compared the writer's tentative scheme: (1) exaltation, depression, agitation; (2) expansion ('extension,' of Münsterberg), contraction (flexion), tension (antagonism); (3) attraction (pleasure), repulsion (pain), vibration or oscillation (excitement). Admitting that diffused organic sensation enters into all three classes of feeling, we would suggest that the exaltation-depression-agitation phase uses the somesthesia as its peculiar material; that the material of the expansion-contraction-tension aspect is the kinesthesia, that the attraction-repulsion-vibration series finds its stuff in the cœnesthesis *par excellence*. In this tentative view, then, the first dream stage was undifferentiated feeling, which tended to define itself in the 'hysteric' stage, but was counteracted by the rising exaltation of an intellectual interest, and finally obliterated by the superior strength of the subject's ruling pleasure of psychologizing. In this view the beginning nightmare stage was depression-contraction-repulsion. Had its activity not been inhibited, the subject might have been the victim of a nightmare with the ear-marks of gloom-fear-pain, with, perhaps, fear predominant. Thus the nightmare might have been an acute attack of dream-insanity!

Returning to our general view, we may suggest that in this experience (and in all others!) *sensation* is the *stuff*, *relation* the *direction* and *impulse* the *force* of consciousness. Such a view as this seems—perhaps illusorily!—to bring mental phenomena into relation with the scheme of the nervous system and especially with the theory of the reflex arc, and thereby into relation with the general scheme of things mundane.

THOMAS P. BAILEY.

UNIVERSITY OF MISSISSIPPI.

* Compare 'Snap Shot of an Association Series,' above mentioned.

DISCUSSION

MR. PITKIN'S REFUTATION OF 'RADICAL EMPIRICISM'

ALTHOUGH Mr. Pitkin does not name me in his acute article on radical empiricism in this JOURNAL for November 22, I fear that some readers, knowing me to have applied that name to my own doctrine, may possibly consider themselves to have been in at my death.

In point of fact my withers are entirely unwrung. I have, indeed, said¹ that 'to be radical, an empiricism must not admit into its constructions any element that is not directly experienced.' But in my own radical empiricism this is only a *methodological postulate*, not a conclusion supposed to flow from the intrinsic absurdity of transempirical objects. I have never felt the slightest respect for the idealistic arguments which Mr. Pitkin attacks and of which Ferrier made such striking use; and I am perfectly willing to admit any number of noumenal beings or events into philosophy if only their pragmatic value can be shown.

Radical empiricism and pragmatism have so many misunderstandings to suffer from, that it seems my duty not to let this one go any farther, uncorrected.

WILLIAM JAMES.

HARVARD UNIVERSITY.

REVIEWS AND ABSTRACTS OF LITERATURE

Thought and Things or Genetic Logic. A Study of the Development and Meaning of Thought. JAMES MARK BALDWIN. Vol. I. Functional Logic or Genetic Theory of Knowledge. London: Swan, Sonnenschein & Co.; New York: The Macmillan Co. 1906. Pp. xii + 273.

The entire work of which the present volume is the first book is, in the author's words, 'an inductive psychological, genetic research into the actual movement of the function of thought.' It is an attempt 'to put a consciously genetic method through the entire structure of cognition, from the simplest to the most developed mode.'

An undertaking of this character and magnitude, if successful, can not fail to fill a most important place in that field of investigation upon which students in psychology and philosophy are at the present time focusing their attention.

Professor Baldwin's work has its unique significance in being the first attempt to make a thorough and consistent application of the genetic principle of explanation to the entire range of cognitive experience. The present volume aims to trace the genesis and development of knowledge from its germinal stage in sense experience up to the stage of dia-

¹ This JOURNAL, Vol. I., p. 534.

tinctively logical thought. The termini of the period of development covered in this first volume are the mode of consciousness in which there are no objects, meanings or distinctions that have logical significance, and the mode of consciousness in which there exist distinctively logical objects, meanings and processes of thought.

Two distinguishable but intimately related stages fill this period of cognitive development; the prelogical stage of cognition and the stage of quasi logical cognition.

To give even a résumé of the contents of this compactly written book would exceed the limits assigned to this review, and I fear would be a greater task than the reviewer would care to essay. I shall content myself with two things: (1) a brief statement of those results from this study which are of especial significance in their bearings upon current discussions in epistemology; and (2) I shall venture some criticisms upon the structure of this book. First, as to the general outcome of this exceedingly thorough and minute genetic study of human cognition. I think whoever accepts the exposition Professor Baldwin has given of the objects, meanings and processes which make the content of cognitive experience will have to admit that the time has come for the reconstruction of the entire discipline of logic. It would seem no longer possible to exempt that science from the fate that has overtaken every science into which the conception of evolution has entered. Logical thought is no exception to those things which are subject to the law of change and growth. There is nothing in the field of logic that remains static or has absolute meaning or validity; meaning, validity, truth are relative to the concrete situations, the particular experiences in which they take their rise, and to which they are relevant. Each meaning is constituted and determined by the stage of development it occupies. And the validity of thought is for that particular mode of consciousness and that level of cognitive experience where it exists and does its work. The upholders of traditional logic will have to face the problem of saving that venerated structure from the doom that is impending, and which works of this sort seem to make inevitable. A reconstruction of logic on the basis of a genetic explanation of our *actual* knowledge seems to be manifest destiny in the light of Professor Baldwin's present work.

There are one or two particular results worked out in this study which have rather decisive bearings upon current epistemological and metaphysical doctrines; one of these is the position which Professor Baldwin has apparently well established, that the first objects which exist for our cognition are not wholly of the stuff of inner experience—the stuff ideas are made of. "The object is not as to its content exhausted by the statement of the active dispositional process which is stimulates."

"There is always a sense residuum or datum." The outcome of this part of the genetic study of knowledge does not, therefore, support an idealistic epistemology; on the contrary, its implication is distinctly realistic. Another result reached by Professor Baldwin is the recognition of other interests than those which pragmatism maintains are the

sole interests that determine and give validity to thought. Professor Baldwin's genetic study of knowledge makes distinctly against the pragmatist's doctrine, that 'the only sort of validity and the only criterion of truth are found in its success in meeting the demands of life.'

The significance of these two results, if they are established, is unmistakable. The claim of idealism such as Professor Royce holds to be based upon epistemology loses a strong support, and the claim of pragmatism that it alone is in harmony with our actual way of knowing is disproved, if it is established that other interests and criteria of truth than those which pragmatism recognizes have a place in the actual life of knowledge. And now comes my criticism upon this book. Greatly as I have come to appreciate the solid and fruitful character of the work done in this genetic study of knowledge, I am forced to confess that I have found this book hard reading, and that I have made my way through it only by overcoming embarrassments and hindrances that need not, I think, have been in my way. I can not think that the fault is altogether mine. I fear my experience will be substantially repeated by others who read this book. I am disposed to attribute the difficulties I have encountered in following Professor Baldwin through these pages in part to his methodology and in part, though in much less degree, to the terminology he has seen fit to employ.

The method naturally prescribed by the subject-matter, and rather distinctly indicated by the express aim of his undertaking, is not the method actually followed; and I think it was a mistake not to have followed the simpler, more direct and consistently genetic method.

Professor Baldwin distinctly announces that his work is to be a *genetic* research into the *actual movement* of the function of thought; he proposes to *follow* in his exposition this actual movement of the cognitive life. There should have been, therefore, an onward movement steadily maintained throughout the volume; each stage of cognitive development should have been so described, each achievement of thought in this stage so completely explained and appreciated, that when this stage was once left, there should be no need of returning to it as a point of departure for new movements in the exposition. In short, cognitive evolution should have been followed by its interpreter in the same strictly genetic method that the evolution itself follows.

It does not seem to me that there is anything, either in the subject-matter or in the author's avowed plan of treatment, that made it impossible or disadvantageous to maintain a single and progressive movement in his study. The method Professor Baldwin has followed necessitated his following out as many separate lines of genetic study as there are distinct matters for investigation. The consequence is that the same topics are, in part at least, rediscussed, although, of course, in different connections and with different ends in view, but nevertheless the same ground is retraversed and the genetic study starts anew with each topic; and this separation of the lines of progression makes it less easy to see that these developments are parts of one process, strands in one cord,

that must be seen in their interwoven character if seen rightly. A glance at the chapters of this book is sufficient to make clear the point of my criticism; and I am reasonably confident that a careful examination of the book will sustain my judgment.

Professor Baldwin enters upon the proposed study in the third chapter, the first two chapters being an introduction which, I think, is very well done, and in Chapters III., IV., V. and VI. he gives a very good genetic exposition of cognition in its prelogical and quasi logical stages. He discusses the various objects of cognition, the processes by which they are constituted, the interests which impel this construction and the controls to which this construction is subject. He follows out the different lines of progression or advance by which cognition passes from its original to its later stages. Now, having given this psychogenetic account of knowledge, Professor Baldwin proceeds in Chapter VII. to a genetic study of meaning, and in the last two chapters in the same way he gives a genetic exposition of the great dualisms of mind and body, subject and object, with the meanings that are involved in them. The result of this method is that the entire development of knowledge is passed over three times; once in what appears to be a general survey—though the actual study is minute enough—a second time in the genetic study of meaning, and the third time in following out the development of dualisms and lesser distinctions.

Now, I can not see that anything is gained by such a methodology; on the contrary, I think this method is largely responsible for an excessive complexity of details, a lack of simplicity, directness, clearness and thorough system in the handling of the subject-matter.

The other embarrassment I have suffered in reading this book is due to the author's terminology. To be sure, he has kindly provided the reader with a sort of dictionary in one of the introductory chapters; but, even with this aid, I think Professor Baldwin's readers will justly complain of an excess of technical terms, and of terms that compel the reader to be perpetually translating the author's language into his own tongue.

I do not make these criticisms without having at the same time a very great willingness to record my fullest appreciation of a notable book, one that can not fail to add to its author's already splendid reputation, and one which will enlarge not a little our knowledge in a great field of science.

JOHN E. RUSSELL.

WILLIAMS COLLEGE.

The Unity of Will: Studies of an Irrationalist. GEORGE AINSLIE HIGHT.
New York: E. P. Dutton & Co. 1906. Pp. xii + 244.

It is a bit hard to know just how to proceed in criticizing the views of an avowed 'irrationalist.' Epistemologically there is next to nothing that can properly be opposed to one who justifies his contention of the primacy of will by intuitive evidence made manifest through 'poetic dreaming.' Those who feel the essential unity of their natures to consist

in a free and unitary will, doubtless feel it and there is an end to it. At most we can make some protest against the distorted psychology which seems to result inevitably from such a view. Yet even here the personal opinion of the observer has a certain conclusive weight in determining at least *his* notions of psychology.

We can, however, utter protest against the universal acceptance of such a voluntarism as belonging to the category of 'truths which, once correctly stated, take their place among the established data of science.' Not that the will may not be as generally acceptable an ultimate as the present status of science can find, but that it certainly is not clearly demonstrated to be the *only one* with which philosophy can make progress. The very maintenance of this dogma by the author shows that despite his avowal he has found it necessary to embrace the rationalistic method in approaching this universal aspect of will. Individual will may be directly evident in my consciousness; universal will certainly is not.

The fundamental fallacy of his contention, it seems to me, rests in the opposition of intellect and will as the only alternatives of metaphysics. Since the concept of being is manifestly transcendental and, as such, can never be adequately expressed in language, why must it, of necessity, be either of these? Philosophy *à la mode* inclines decidedly towards the dynamic rather than the static interpretation. Thus voluntarism in one form or another seems to be 'in the air.' Yet, if we pause in our search for an ultimate *sub specie æternitatis* to consider the relative merits of the dynamic and the static, must we not hesitate before establishing either as necessarily prior to and more fundamental than the other? Is it any easier, I ask, to conceive an action prior to the thing acted upon, than the thing as static, totally at rest?

Even accepting the will as a basis for idealism, is not the step from will to intellect rather vague? And in maintaining a species of realism, as our author does on a voluntaristic basis, is not the breach still further widened? For myself, I am unable to detect the intuitive presence of free will in my own consciousness. Granted that it still be there, I am yet unable to trace the steps of its objective realization in things or its subjective realization in conscious processes other than those which I recognize as volitional in type. The will, an activity, does not appear to be identical with consciousness as a whole nor with the things of the outer world which it is said to motivate and prompt into existence. There seem to be two divergent concepts of will here confused: the will of the self-consciousness, and will as ontological being. This confusion of voluntarism has been clearly pointed out by Kuelpe.¹

I do recognize in my first-hand experience both static and dynamic factors, mutually interwoven and inseparable. The things which I experience are never totally quiescent, neither do I experience activity as such apart from things. I am inclined also to posit the existence of other things in the universe at large as possessed of greater or less degrees of consciousness independent of me, yet all at once dynamic and static.

¹ 'Einleitung in die Philosophie,' 3d ed. 1903. § 27: 13, 14.

But when I turn to the ontological question of a metaphysical essence which shall comprise the being of all these, I can be satisfied with neither voluntaristic, idealistic, energistic nor materialistic formulation. I seem to require something bigger and more all-inclusive than any of these affords. Thus I concur thoroughly with the author's statement: "To assert that the reality of the world is only that which can be seen from one standpoint, or from another, is unphilosophical and untrue, and it is the mistake made by the Ist-ites and party leaders of our day." And yet voluntarist and irrationalist will he be called!

Turning now to some of the more practical consequences of the work, the humanistic tendencies seem highly instructive. The author confesses the 'pragmatic method,' though without so naming it, when he declares "that in things physical the essence of anything is always relative, *i. e.*, directed to some purpose, and changes with that purpose. It is not a stable substance."

The critique of logic as being mainly linguistic and rational is perhaps the ablest part of the book. The author maintains, in brief, that the positive syllogism discovers no truth, and that the principle of subordination is the only one operative in thought processes. The negative syllogism is the critical form of thought and it may, by process of elimination, lead to truth. The only positive syllogisms which promote truth are those which, based on different premises, converge to the same conclusion. A high degree of probability is thus attained. In general, however, the canon of logic that the conclusion is certain provided the premises be true, falls before the doctrine that true premises bring no conclusion at all; they merely assert themselves. Original thought is speechless. Once clothed in words, its originality is gone and it begins to degenerate into dead, mechanical routine. Positive language, except it be for purposes of instruction, expresses not our thoughts, but our sophisms.

The great misunderstanding in the search for a criterion of truth rests in the fact that 'the concept of truth is inseparable from that of language; it is the truth of a verbal subject and predicate.' In strictest sense acts can never be illogical, and the purpose of mental processes is not truth, but action. Definitions in verbal form are always sophistical, since the final definition of a thing is possible only when the science of that thing is complete.

We have, then, for our legitimate activity a verifiable science beginning and ending with observable facts made up (1) of 'inferences verifiable by known facts already established, or at once determinable,' as when science tells us the exact amount of metal contained in a certain ore, etc., and (2) of inferences verifiable 'by some act which it was the purpose of the inference itself to bring forth,' as the inference based on a knowledge of geology that a certain region contains gold. All the rest is unverifiable speculation, only a higher development of sophistry.

The book is written throughout in an attractive and readable style; to this is added the merit of brevity, unusual in philosophic works of this sort. At the end a series of 'First Principles' sums up in concise form

the main views of the author, which, although, as has been pointed out, they do not always fit in with those of one more used to a psychological and epistemological method of approach, still are calculated to present to all much food for profound and beneficial reflection.

UNIVERSITY OF TENNESSEE.

ROBERT MORRIS OGDEN.

Psychology Applied to Legal Evidence. G. F. ARNOLD, I.C.S. London: W. Thacker & Co. 1906. Pp. 470.

Ever since psychology has attained the rank of a distinct science there have been practical-minded students who have sought to put the methods and results of mind study to good use in the various walks of life. We have become familiar with the psychology of education, the psychology of art, the psychology of advertizing, the psychology of moral improvement and a dozen other applied psychologies. But it is only within the last few years that anybody has striven to apply psychology to that most important social function, the law. Sociologists have, to be sure, viewed the law as a product of certain intricate mental factors; but it was not until several prominent German legalists, headed by Germany's greatest attorney, von Liszt, found themselves confronted with the task of revising the criminal laws of their empire, that the demand for a psychological critique of legal problems became imperious. The difficulties which the Germans encountered in revising the 'Bürgerliches Gesetzbuch' could be solved only by an appeal to the psychologists. An organization of lawyers and psychologists was formed, crucial problems were discussed and, so far as possible, investigated experimentally. Ludwig Stern and his coworkers at the University of Breslau began publishing reports bearing upon moot questions such as accountability, suggestion in cross-examination, memory of different classes of objects and so on. Through these publications the psychological world has already become at least aware of the new 'applied science.'

Mr. Arnold's book, then, will not greatly impress the psychologist. Not only does it appear several years after Stern's 'Beiträge zur Psychologie der Aussage,' but it has nothing new to offer. But, fortunately, the work may be judged by other standards than those of a specialist. In the preface Mr. Arnold makes clear that he is contributing nothing to law alone and likewise nothing to pure psychology. His aim has been solely to induce lawyers to see the relevancy of psychological facts to the legal theories of evidence. Strictly, then, this volume should be reviewed in a law journal.

Nevertheless, Mr. Arnold's presentation of certain crucial points at law will come as a revelation to many theoretical psychologists, convincing them that the legal world, commentaries, lawyers and judges combined, still tarries slumbrously in the high weeds of verbalism and sophistry. Any psychologist who is at the same time a citizen and liable to arrest will feel, after reading Mr. Arnold's volume, that 'something ought to be done about it.' And he will be convinced, with the author, that psychologists have already accomplished enough to make reform possible.

The writer is deputy secretary to the government of India and was previously acting divisional judge in Burma. He is admirably equipped for his literary task from the legal side; but one could not say as much of his psychological powers. While his numerous references indicate a wide range of reading, his use of information is somewhat promiscuous and eclectic. The lawyer in him shows up in his willingness to cite any favorable decision by any philosopher or psychologist in order to prove his point. Remembering that the book is meant for lawyers, we can commend the method because it will compel these gentlemen to search the psychological scriptures assiduously in order to take objection to Mr. Arnold's views.

It is impossible to summarize here more than the most fundamental points raised in the volume. The opening chapters analyze the concept of 'intention' and disclose a series of grave legal fallacies chiefly traceable to the identification of intention with the real results of an act. As a result of this, intention is assumed where there is not even knowledge, and again where there is knowledge that would, of itself, lead to wholly different acts. The law thus assumes that every act has a motive, and it discovers the character of the motive by assuming that the act is the 'natural' expression of a 'normal' intention. One could scarcely wish for a more convincing dissection of the ridiculous juridical postulates about 'normal man' and 'probable motives' than that Mr. Arnold here offers. Unfortunately, though, the writer does not show whither his destruction of the legal fiction of a 'normal man' leads, namely, to a constructive study of the correlation of human traits and a theory of probabilities based upon class measurements. So long as lawyers are free to continue logic-chopping, experimental psychologists will receive scant respect as reformers.

In Chapter VIII. the nature of belief and tests of truth are investigated. Mr. Arnold concludes very sanely that experience alone gives shrewdness in weighing testimony. By this he means, not that scientific study of testimony is fruitless, but rather that it reveals such a complex mass of interacting mental traits that no cut and dried code of evidence can ever be relied upon. The legal judgment is one of probabilities, and these probabilities are calculable only by experienced specialists. The writer's remarks on accessory evidence, precedent and relevancy are excellent, though sketchy. The asinine method of determining the relevancy of evidence concerning the 'general character' of the defendant is soundly berated (p. 279, etc.).

Other topics dealt with are insanity, hallucinations, identification of handwriting, responsibility, punishment and racial differences in truthfulness and other traits. The book is one which every attorney should read carefully. Its technical faults are more than atoned for by the fact that it is the first book in the English language which calls the attention of lawyers to the value of psychological criticism and the attention of psychologists to the glaring injustices of many laws to which they are subject.

WALTER B. PITKIN.

COLUMBIA UNIVERSITY.

JOURNALS AND NEW BOOKS

ZEITSCHRIFT FÜR PSYCHOLOGIE UND PHYSIOLOGIE DER SINNESORGANE. June, 1906, Band 42, Heft 1. Abteilung für Psychologie. *Ueber eine besondere Klasse abstrakter Begriffe* (pp. 1-9): M. RADÁKOVIC. - The concept of a limit in mathematics is allied to certain abstract concepts that are not strictly mathematical, such as that of a straight line, of empty space, of a frictionless surface. The process of reaching such concepts is that of passing from the observation of an unlimited number of objects which are arranged in a well-ordered series, but is related to it in the following ways: (1) properties which are equally present in all the objects of the series are present in the concept of the limit; (2) measurable properties which in the order of the series tend to a certain limiting value are properties of the limiting concept, and with the limiting value; (3) properties of the objects which are not concerned in the arrangement of the series are not included in the limiting concept. *Ueber die scheinbare Verschiebung zwischen zwei verschiedenfarbigen Flächen im durchfallenden diffusen Lichte* (pp. 10-21): VIKTOR GRÜNBERG. - Two colored surfaces at a certain intensity of illumination appear to be situated at the same distance from the observing eye. If the intensity is increased from this neutral point by intensities 2, 3, 4, the colors from the red end of the spectrum advance before those from the blue end by as much as the colors from the red end recede when the intensities are diminished in the same ratio. *Experimentelles über Vorstellungsinadäquatheit* (pp. 22-55): V. BENUSSI. - Previous studies have shown that in the apprehension of a complex of points or lines the inadequacy (illusion) in the perception of form depends upon the idea of form and varies with it, and not upon spatial arrangement or simultaneous observation of the complex. The problem of the investigation is: With a unitary perception of a constant but equivocal complex of objects of sensation, does the inadequacy vary according as one or the other of the forms given by the complex is preperceived, so that the variation in inadequacy may be attributed to the idea of form as the sole variable condition? The results on various illusions justify an affirmative answer, for the inadequacy reveals itself to be undoubtedly an inadequacy in the idea of form. *Literaturbericht*.

Craigie, W. A. *The Religion of Ancient Scandinavia*. Religions, Ancient and Modern. London: Constable. 1906. Pp. 70.

Fraccaroli, Giuseppe. *Platone: Il Timeo*. Turin: Fratelli Bocca. 1906.

Immanuel Kants Grundlegung zur Metaphysik der Sitten. Dritte Auflage. Edited by Karl Vorländer. Leipzig: Verlag der Dürr'schen Buchhandlung. 1906. Pp. xxx + 102. 1.40 M.

Keyserling, Hermann Graf. *Das Gefüge der Welt, Versuch einer kritischen Philosophie*. Munich: F. Bruckmann A.-G. 1906. Pp. viii + 382. 5 M.

- Mead, G. R. S. *Thrice-Greatest Hermes: Studies in Hellenistic Theosophy and Gnosis*. A translation of the extant sermons and fragments of the Trismegistic literature, with prolegomena, commentary and notes. Three volumes. London: Theosophical Publishing Society. 1906. Pp. 481; 403; 371.
- Parsons, Elsie Clews. *The Family*. An ethnographical and historical outline with descriptive notes, planned as a text-book for the use of college lecturers and of directors of home-reading clubs. New York: G. P. Putnam's Sons. 1906. Pp. xxv + 389.
- Weinstein, B. *Die Philosophischen Grundlagen der Wissenschaften*. Vorlesungen Gehalten an der Universität Berlin. Leipzig and Berlin: B. G. Teubner. 1906. Pp. xiv + 543. 9 M.

NOTES AND NEWS

WILLIAM STERN and OTTO LIPMANN have recently established at Berlin the *Institut de Psychologie Appliquée et de Recherches Psychologiques Collectives*. The purpose of the institution will be to organize and to centralize research by bringing together and interrelating work otherwise carried on in isolation. The institute, which is fortunate in its ample private endowment, will be devoted principally to the constitution of commissions for studying the choice of methods, statistical undertakings and the determination of the subject-matter of research together with the place, time and limits most suitable. Problems to be taken up at the outset include the development of language and of thought during the first years of childhood, the study of evidence in its relations to the courts and to pedagogy, the study of various forms of intelligence, the nature and the development of abnormal faculties, types of intuition, etc. Inquiries should be directed to the institute, at Aschaffenburgstrasse 27.

THE University of Chicago Press is bringing out a book entitled 'The Esthetic Experience: Its Meaning in a Functional Psychology,' by Elizabeth Kemper Adams, Instructor in Philosophy and Education in Smith College. Dr. Adams establishes an 'esthetic moment' in the process of reflective thinking, and arrives at an essentially social character of the esthetic consciousness. Philosophical implications are not ignored.

EMERITUS PROFESSOR CAMPBELL FRASER was presented on November 6, by the senatus and former pupils, with addresses of congratulation on the occasion of his jubilee as professor of logic and metaphysics in the University of Edinburgh. The principal, Sir William Turner, presided over a large representation of the senatus, and the class room was filled with the general public and students.

CARLO CANTONI, founder and director of the *Rivista Filosofica*, died on September 11, at Grapello Cairoli. The chair of theoretical philosophy at the University of Pavia rendered vacant by the death of Senator Cantoni will be filled by Professor Guido Villa.

INDEX

NAMES OF CONTRIBUTORS ARE PRINTED IN SMALL CAPITALS

- Absolute, The Mad.—W. JAMES, 656.
The Mad, of a Pluralist.—W. C. GORE, 575.
- ADAMS, ELIZABETH KEMPER.—Bertier on *La beauté rationelle*, 446.
- Ingenieros on *La Psychophysiologie du langage musical*, 444.
- Adler's The Essentials of Spirituality.—E. L. NORTON, 413.
- AIKINS, H. AUSTIN.—Britan's Spinoza's Principles of Descartes's Philosophy, 302.
- Alexander's Poetry and the Individual.—R. B. PERRY, 439.
- American Philosophical Association, Fifth Meeting of, 70.
- American Psychological Association, Fourteenth Annual Meeting of.—V. A. C. HENMON, 151.
- ANGELL, JAMES ROWLAND.—A Reply to Mr. Marshall, 350.
Recent Discussion of Feeling, 169.
and A. W. MOORE.—Studies in Philosophy and Psychology. A Commemorative Volume by Former Students of Charles Edward Garman, 631.
- Angell, A Note to Professor.—H. R. MARSHALL, 238.
- ARMSTRONG, A. C.—Höfdding's The Problems of Philosophy, 77.
Rouvier's *L'Enseignement public en France au début du XXe siècle*, 415.
- ARNOLD, FELIX.—Meinong on Urteilsgefühle: was sie sind und was sie nicht sind, 52.
Ribot's Essay on the Creative Imagination, 695.
The Given Situation in Attention, 567.
- Arnold's Psychology Applied to Legal Evidence.—W. B. PITKIN, 718.
- Art, Metaphysics as a Branch of.—K. GORDON, 365.
Metaphysics, Science or.—B. C. EWER, 545.
Metaphysics, Science or.—K. GORDON, 604.
- Association, Snap Shot of an, Series.—T. P. BAILEY, 435.
- Attention, The Given Situation in.—F. ARNOLD, 567.
- Waves, The Telephone and.—G. L. JACKSON, 602.
- BAILEY, THOMAS P.—Snap Shot of an Association Series, 435.
Snap Shot of a Dream Drama, 708.
- BAIRD, J. W.—A Reply to Dr. Miner, 101.
Final Statements in the Discussion between Professor Miner and Dr. Baird, 291.
The Yale Meeting of Experimental Psychologists, 381.
- Baird's (Dr.) Criticism of the Iowa Studies in Psychology.—J. B. MINER, 45.
- Baldwin's Thought and Things or Genetic Logic.—J. E. RUSSELL, 712.
- BECKER, FRANK C.—The Final Edition of Spencer's 'First Principles: Part I.,' 287.
- Belief, The Relation Between the Act and the Object of.—W. B. PITKIN, 505.
- BENTLEY, I. MADISON.—Calkins on a Reconciliation between Structural and Functional Psychology, 303.
- Berthelot on *Le Darwinisme n'est pas l'Evolutionnisme*.—F. B. SUMNER, 243.
- Bertier on *La beauté rationelle*.—E. K. ADAMS, 446.
- BODE, B. H.—Hermant on *La Conscience*, 164.
Realism and Pragmatism, 393.
- BOGGS, LUCINDA PEARL.—The Relation of Feeling and Interest, 462.
- Boncour, Philippe and, on *Les anomalies mentales chez les écoliers* and Weygandt on *Leicht abnorme Kinder* and on *Idiotie*.—S. I. FRANZ, 190.
- Bonfiglioli on *Tertulliano e la filosofia pagana* and on *La Psicologia di Tertulliano*.—W. T. BUSH, 131.
- BOODIN, JOHN E.—Space and Reality; I. Ideal or Serial Space; II. Real Space, 533, 589.
- Borgquist on *Crying*.—N. NOB-WORTHY, 527.
- Bosanquet on *Contradiction and Reality*.—W. B. PILLSBURY, 222.
- Boulanger and Hermant's *Association des idées chez les idiots et les imbeciles*.—C. M. CAMPBELL, 500.
- Britan's Spinoza's Principles of Descartes's Philosophy.—H. A. AIKINS, 302.

- BROWN, HAROLD CHAPMAN.—Keyser on Mathematical Emancipations, 106.
 Lachelier on La proposition et le syllogisme, 502.
 Pieri on La compatibilité des axiomes de l'arithmétique, 530.
 Russell on Some Difficulties in the Theory of Transfinite Numbers and Order Types, 388.
 Browne on The Psychology of the Simple Arithmetical Processes: A Study of Certain Habits of Attention and Association.—E. L. NORTON, 610.
 BUSH, WENDELL T.—Bonfiglioli on Tertulliano e la filosofia pagana and on La Psicologia di Tertulliano, 131.
 Del Vecchio's I presupposti filosofici della nozione del diritto and Salvadori's Das Naturrecht und der Entwicklungsgedanke, 299.
 The Privacy of Consciousness, 42.
 Calkins on a Reconciliation between Structural and Functional Psychology.—I. M. BENTLEY, 303.
 Calkins's (Professor) Mediation.—M. S. CASE, 208.
 CAMPBELL, C. MACFIE.—Boulanger and Hermant's Association des idées chez les idiots et les imbéciles, 500.
 CASE, MARY S.—Professor Calkins's Mediation, 208.
 CHAMBERS, WILL GRANT.—Memory Types of Colorado Pupils, 231.
 Claparède on L'agrandissement et la proximité apparents de la lune à l'horizon.—A. H. PIERCE, 49.
 Claparède's Psychologie de l'enfant et pédagogie expérimentale.—S. F. MACLENNAN, 472.
 Cognitive Thought and Immediate Experience.—J. A. LEIGHTON, 174.
 Color-Blindness, The Detection of.—V. A. C. HENMON, 341.
 'Conscious,' The Terms, and 'Consciousness.'—J. DEWEY, 39.
 Consciousness, The Privacy of.—W. T. BUSH, 42.
 The Terms 'Conscious' and.—J. DEWEY, 39.
 Consistency, The Nature of.—G. A. TAWNEY, 113.
 Two Types of.—G. A. TAWNEY, 457.
 Crawford's The Philosophy of F. H. Jacobi.—N. WILDE, 104.
 Czermak on Eine virtuelle stereoskopische Täuschung.—E. B. HOLT, 25.
 D'Allones on Rôle des sensations internes dans les émotions et dans la perception de la durée.—H. N. GARDINER, 108.
 Davenport's Primitive Traits in Religious Revivals.—H. H. HORNE, 48.
 Davidson's New Interpretation of Herbert's Psychology.—J. F. MESSENGER, 471.
 DAVIES, ARTHUR ERNEST.—The Genesis of Ideals, 482.
 The Personal and the Individual, 401.
 Definition of Experimentation.—F. H. ROUSMANIERE, 673.
 DE LAGUNA, THEODORE.—Royce on The Relation of the Principles of Logic to the Foundations of Geometry, 357.
 De Laguna on Stages of the Discussion of Evolutionary Ethics.—N. WILDE, 136.
 Del Vecchio's I presupposti filosofici della nozione del diritto and Salvadori's Das Naturrecht und der Entwicklungsgedanke.—W. T. BUSH, 299.
 De Montmorand on Les états mystiques.—J. H. LEUBA, 277.
 Developmental Psychology, The Interpretation of a System from the Point of View of.—E. TAUSCH, 90.
 DEWEY, JOHN.—Reality as Experience, 253.
 The Terms 'Conscious' and 'Consciousness,' 39.
 Dissociation of Personality, Idealism and the.—F. C. S. SCHILLER, 477.
 Dream, Snap Shot of a, Drama.—T. P. BAILEY, 708.
 Duhem's La théorie physique; son objet et sa structure.—E. G. SPAULDING, 606.
 DUNCAN, GEORGE M.—On 'Feeling,' 149.
 Emotional Expression and the Doctrine of Mutations.—A. H. PIERCE, 573.
 Empiricism, A Problem of Evidence in Radical.—W. B. PITKIN, 645.
 Mr. Pitkin's Refutation of Radical.—W. JAMES, 712.
 EWER, BERNARD C.—Metaphysics, Science or Art, 545.
 Experience, Cognitive Thought and Immediate.—J. A. LEIGHTON, 174.
 Reality as.—J. DEWEY, 253.
 Reality as Possible.—M. P. MASON, 449.
 Experimentation, A Definition of.—F. H. ROUSMANIERE, 673.
 FARLEY, J. H.—Unity and the World Ground, 651.
 Farnell's The Evolution of Religion: An Anthropological Study.—F. C. FRENCH, 580.
 Feeling.—E. A. NORRIS, 467.
 As the Object of Thought.—K. GORDON, 123.
 On.—G. M. DUNCAN, 149.
 Recent Discussion of.—J. R. ANGELL, 169.

- Self as a Developed, Complex.—E. A. NORRIS, 511.
- The Definition of.—H. N. GARDINER, 57.
- The Nature of.—H. R. MARSHALL, 29.
- The Relation of, and Interest.—L. P. BOGGS, 462.
- The Term.—M. F. WASHBURN, 62.
- Thought Revealed as a Process in Introspection.—E. A. NORRIS, 225.
- Final Edition of Spencer's 'First Principles: Part I.'—F. C. BECKER, 287.
- Fite on The Experience Philosophy.—R. M. OGDEN, 275.
- Flechsig on Hirnphysiologie und Willenstheorien.—R. M. YERKES, 134.
- FLING, FRED MORROW.—Hughes's Concept Action in History and in the Natural Sciences, 185.
- FRANZ, SHEPHERD IVORY.—Head, Rivers and Sherren on The Afferent Nervous System from a New Aspect, and Head and Sherren on The Consequences of Injury to the Peripheral Nerves in Man, 271.
- Philippe and Boncour on Les anomalies mentales chez les écoliers, and Weygandt on Leicht abnorme Kinder and on Idiotie, 190.
- Psychological Opportunity in Psychiatry, 561.
- FRENCH, F. C.—Farnell's The Evolution of Religion: An Anthropological Study, 580.
- GARDINER, H. N.—D'Allones on Rôle des sensations internes dans les émotions et dans la perception de la durée, 108.
- The Definition of 'Feeling,' 57.
- Garman (Charles Edward), A Commemorative Volume of, by Former Students. Studies in Philosophy and Psychology.—A. W. MOORE and J. R. ANGELL, 631.
- GORDON, KATE.—Feeling as the Object of Thought, 123.
- Metaphysics as a Branch of Art, 365.
- Metaphysics, Science or Art, 604.
- GORE, WILLARD C.—The Mad Absolute of a Pluralist, 575.
- Gossard on Linéaments d'une synthèse scolastique des mœurs.—W. TURNER, 417.
- Group Concept in the Service of Philosophy.—W. E. HOCKING, 421.
- Harrison's The Religion of Ancient Greece.—W. A. HEIDEL, 384.
- Head, Rivers and Sherren on The Afferent Nervous System from a New Aspect, and Head and Sherren on The Consequences of Injury to the Peripheral Nerves in Man.—S. I. FRANZ, 271.
- HEIDEL, W. A.—Harrison's The Religion of Ancient Greece, 384.
- MacGregor on The Practical Deductions of the Theory of Knowledge, 163.
- Newbold on Philolaus, 582.
- Raeder's Platons Philosophische Entwicklung, 582.
- HENMON, VIVIAN A. C.—Fourteenth Annual Meeting of the American Psychological Association, 151.
- The Detection of Color-Blindness, 341.
- Hermant on La Conscience.—B. H. BODE, 164.
- Hermant's, Boulanger and, Association des idées chez les idiots et les imbeciles.—C. M. CAMPBELL, 500.
- Hight's The Unity of Will: Studies of an Irrationalist.—R. M. OGDEN, 715.
- HOCKING, WILLIAM ERNEST.—The Group Concept in the Service of Philosophy, 421.
- The Transcendence of Knowledge, 5.
- Höfding's The Problems of Philosophy.—A. C. ARMSTRONG, 77.
- HOLT, E. B.—Czermak on Eine virtuelle stereoskopische Täuschung, 25.
- Marbe on Erzeugung kurzdauernder Lichtreize mit Hilfe des Projektionsapparats, 109.
- Piper on Die Funktionen der Stäbchen und Zapfen und über die physiologische Bedeutung des Sehpurpurs, 137.
- Schaefer on Die Erzeugung physikalischer Kombinationstöne mittels des Stentortelexphons, 25.
- Stern on Die Pseudomotorische Funktion der Hirnrinde, 81.
- HOENE, H. H.—Davenport's Primitive Traits in Religious Revivals, 48.
- Horne's Psychological Principles of Education.—C. H. JOHNSTON, 666.
- HUGHES, PERCY.—Rejoinder, 42.
- Hughes's Concept Action in History and in the Natural Sciences.—F. M. FLING, 185.
- Hyslop's Enigmas of Psychical Research.—J. JASTROW, 498.
- Idealism and the Dissociation of Personality.—F. C. S. SCHILLER, 477.
- Is Absolute, Solipsistic?—F. C. S. SCHILLER, 85.
- Ideals, The Genesis of.—A. E. DAVIES, 482.
- Identity, The Meaning of, Similarity and Nonentity; A Criticism of Mr. Russell's Logical Puzzles.—W. P. MONTAGUE, 127.
- Imageless Thought.—R. S. WOODWORTH, 701.
- Immediacy, Thought and.—F. C. S. SCHILLER, 234.
- Individual, The Personal and the.—A. E. DAVIES, 401.

- Induction, On the Nature of.—W. P. MONTAGUE, 281.
- Ingenieros on La Psychophysiologie du langage musical.—E. K. ADAMS, 444.
- Intellectual Efficiency, Linguistic Ability and.—F. L. WELLS, 680.
- Interest, The Relation of Feeling and.—L. P. BOGGS, 462.
- Iowa Studies in Psychology, Dr. Baird's Criticism of the.—J. B. MINER, 45.
- JACKSON, GEORGE L.—The Telephone and Attention Waves, 602.
- JAMES, WILLIAM.—G. Papini and the Pragmatist Movement in Italy, 337.
- Mr. Pitkin's Refutation of Radical Empiricism, 712.
- The Mad Absolute, 656.
- James's (Professor) 'Hole.'—H. NICHOLS, 64.
- JASTROW, JOSEPH.—Hyslop's Enigmas of Psychical Research, 498.
- Jennings's Behavior of the Lower Organisms.—R. M. YERKES, 658.
- Joachim's The Nature of Truth.—F. C. S. SCHILLER, 549.
- JOHNSON, WM. HALLOCK.—Schiller on Faith, Reason and Religion, 189.
- JOHNSTON, CHARLES HUGHES.—Horne's Psychological Principles of Education, 666.
- JONES, ADAM LEROY.—Liebeck on Musikalische Einfühlung, 161.
- Journals and New Books, 26, 54, 82, 110, 138, 164, 191, 222, 248, 278, 305, 335, 361, 390, 418, 447, 473, 503, 531, 558, 584, 613, 643, 670, 697, 720.
- Judgment, Psychology and the Logical, with Reference to Realism.—J. A. LEIGHTON, 12.
- Keyser on Mathematical Emancipations.—H. C. BROWN, 106.
- Kleinpeter's Die Erkenntnistheorie der Naturforschung der Gegenwart.—G. A. TAWNEY, 687.
- Knowledge of Past Events.—R. B. PERRY, 617.
- The Ground of the Validity of.—E. G. SPAULDING: I., 197; II., 257; III., 309; IV., 371.
- The Transcendence of.—W. E. HOCKING, 5.
- Lachelier on La proposition et le syllogisme.—H. C. BROWN, 502.
- Ladd's The Philosophy of Religion.—A. T. ORMOND, 522.
- Lectures on the Method of Science.—F. J. E. WOODBRIDGE, 692.
- LEIGHTON, J. A.—Cognitive Thought and Immediate Experience, 174.
- Psychology and the Logical Judgment with Reference to Realism, 12.
- LEUBA, JAMES H.—De Montmorand on Les états mystiques, 277.
- Liebeck on Musikalische Einfühlung.—A. L. JONES, 161.
- Linguistic Ability and Intellectual Efficiency.—F. L. WELLS, 680.
- Standards.—F. L. WELLS, 431.
- Logical Diagram, A New.—W. J. NEWLIN, 539.
- Judgment, Psychology and the, with Reference to Realism.—J. A. LEIGHTON, 12.
- LOVEJOY, ARTHUR O.—The Sixth Annual Meeting of the Western Philosophical Association, 318.
- Lovejoy on Kant's Reply to Hume.—D. F. SWENSON, 333.
- MacGregor on The Practical Deductions of the Theory of Knowledge.—W. A. HEIDEL, 163.
- MACLENNAN, S. F.—Claparède's Psychologie de l'enfant et pédagogie expérimentale, 472.
- Marbe on Erzeugung kurzdauernder Lichtreize mit Hilfe des Projektionsapparats.—E. B. HOLT, 109.
- MARSHALL, HENRY RUTGERS.—A Note to Professor Angell, 238.
- The Nature of Feeling, 29.
- Marshall, A Reply to Mr.—J. R. ANGELL, 350.
- MASON, M. PHILLIPS.—Reality as Possible Experience, 449.
- Mediation, Professor Calkins's.—M. S. CASE, 208.
- Meinong on Urteilsgefühle: was sie sind und was sie nicht sind.—F. ARNOLD, 52.
- Melli's La filosofia di Schopenhauer.—W. B. PITKIN, 47.
- Memory Types of Colorado Pupils.—W. G. CHAMBERS, 231.
- MESSENGER, J. F.—Davidson's New Interpretation of Herbart's Psychology, 471.
- Metaphysics as a Branch of Art.—K. GORDON, 365.
- Science or Art.—R. C. EWER, 545.
- Science or Art.—K. GORDON, 604.
- MINER, JAMES BURT.—Dr. Baird's Criticism of the Iowa Studies in Psychology, 45.
- Final Statements in the Discussion between Professor Miner and Dr. Baird, 291.
- Miner, A Reply to Dr.—J. W. BAIRD, 101.
- MONROE, WILL S.—Painter's Great Pedagogical Essays: Plato to Spencer, 79.
- MONTAGUE, W. P.—On the Nature of Induction, 281.
- The Meaning of Identity, Similarity and Nonentity: A Criticism of Mr. Russell's Logical Puzzles, 127.

- MOORE, A. W.—Santayana's Reason in Science, 469.
 Santayana's The Life of Reason or The Phases of Human Progress, 211.
 and J. R. ANGELL.—Studies in Philosophy and Psychology. A Commemorative Volume by Former Students of Charles Edward Garman, 631.
 The Function of Thought, 519.
 Moral Individual, The.—J. D. STOOFS, 141.
 Mutations, Emotional Expression and the Doctrine of.—A. H. PIERCE, 573.
 Newbold on Philolaus.—W. A. HEIDEL, 582.
 NEWLIN, WM. J.—A New Logical Diagram, 539.
 New York Academy of Sciences, Section of Anthropology and Psychology of the.—R. S. WOODWORTH, 16, 267, 351.
 NICHOLS, HERBERT.—Professor James's 'Hole,' 64.
 Nonentity, The Meaning of Identity, Similarity and: A Criticism of Mr. Russell's Logical Puzzles.—W. P. MONTAGUE, 127.
 NORRIS, E. A.—Feeling, 467.
 Self as a Developed Feeling Complex, 511.
 Thought Revealed as a Feeling Process in Introspection, 225.
 NOBBSWORTHY, NAOMI.—Borgquist on Crying, 527.
 NORTON, E. L.—Adler's The Essentials of Spirituality, 413.
 Browne on The Psychology of the Simple Arithmetical Processes: A Study of Certain Habits of Attention and Association, 610.
 Sterrett's The Freedom of Authority: Essays in Apologetics, 239.
 Notes and News, 27, 57, 84, 111, 139, 166, 195, 223, 250, 279, 307, 336, 363, 392, 419, 448, 475, 504, 532, 559, 587, 614, 644, 671, 698, 721.
 OGDEN, ROBERT MORRIS.—Fite on The Experience Philosophy, 275.
 Hight's The Unity of Will: Studies of an Irrationalist, 715.
 ORMOND, A. T.—Ladd's The Philosophy of Religion, 522.
 Painter's Great Pedagogical Essays: Plato to Spencer.—W. S. MONROE, 79.
 Papini (G) and the Pragmatist Movement in Italy.—W. JAMES, 337.
 Past Events, The Knowledge of.—R. B. PERRY, 617.
 PERRY, RALPH BARTON.—Alexander's Poetry and the Individual, 439.
 The Knowledge of Past Events, 617.
 Personal (The) and the Individual.—A. E. DAVIES, 401.
 Philippe and Boncour on Les anomalies mentales chez les écoliers and Weygandt on Leicht abnorme Kinder and on Idiotie.—S. I. FRANZ, 190.
 Philosophy, Studies in, and Psychology. A Commemorative Volume by Former Students of Charles Edward Garman.—A. W. MOORE and J. R. ANGELL, 631.
 The Group Concept in the Service of.—W. E. HOCKING, 421.
 PIERCE, A. H.—Claparède on L'agrandissement et la proximité apparents de la lune à l'horizon, 49.
 Emotional Expression and the Doctrine of Mutations, 573.
 Should We still Retain the Expression 'Unconscious Cerebration' to Designate Certain Processes connected with Mental Life? 626.
 Pieri on La compatibilité des axiomes de l'arithmétique.—H. C. BROWN, 530.
 PILLSBURY, W. B.—Bosanquet on Contradiction and Reality, 222.
 Piper on Die Funktionen der Stäbchen und Zapfen und über die physiologische Bedeutung des Sehpurpurs.—E. B. HOLT, 137.
 PITKIN, WALTER B.—A Problem of Evidence in Radical Empiricism, 645.
 Arnold's Psychology Applied to Legal Evidence, 718.
 Melli's La filosofia di Schopenhauer, 47.
 Porena's Che cos' è il bello? 442.
 The Relation Between the Act and the Object of Belief, 505.
 Virgil's Il sentimento imperialista, 557.
 Why Solipsism is Rejected, 344.
 Pitkin's (Mr.) Refutation of 'Radical Empiricism.'—W. JAMES, 712.
 Poincaré on Les mathématiques et la logique and Russell on La relation des mathématiques à la logistique.—W. H. SHELDON, 246.
 Porena's Che cos' è il bello?—W. B. PITKIN, 442.
 Pragmatism, Realism and.—B. H. BODE, 393.
 Pragmatist, G. Papini and the Movement in Italy.—W. JAMES, 337.
 Pragmatist's (The) Meaning of Truth.—J. E. RUSSELL, 599.
 Psychiatry, Psychological Opportunity in.—S. I. FRANZ, 561.
 Psychology and the Logical Judgment with Reference to Realism.—J. A. LEIGHTON, 12.
 Studies in Philosophy and. A Commemorative Volume by Former

- Students of Charles Edward Garman.—A. W. MOORE and J. R. ANGELL, 631.
- The Interpretation of a System from the Point of View of Developmental.—E. TAUSCH, 90.
- Psychological Opportunity in Psychiatry.—S. I. FRANZ, 561.
- Psychologists, The Yale Meeting of Experimental.—J. W. BAIRD, 381.
- Raeder's Platons Philosophische Entwicklung.—W. A. HEIDEL, 582.
- RAUB, WILLIAM L.—Schiller on Empiricism and the Absolute, 80.
- Realism and Pragmatism.—B. H. BODE, 393.
- Psychology and the Logical Judgment with Reference to.—J. A. LEIGHTON, 12.
- Reality as Experience.—J. DEWEY, 253.
- as Possible Experience.—M. P. MASON, 449.
- Space and: I. Ideal or Serial Space; II. Real Space.—J. E. BOODIN, 533, 589.
- Rejoinder.—P. HUGHES, 42.
- Relation Between the Act and the Object of Belief.—W. B. PITKIN, 505.
- Ribot's Essay on the Creative Imagination.—F. ARNOLD, 695.
- Rivers, Head, and Sherren on The Afferent Nervous System from a New Aspect, and Head and Sherren on The Consequences of Injury to the Peripheral Nerves in Man.—S. I. FRANZ, 271.
- ROUSMANIERE, FRANCES HALL.—A Definition of Experimentation, 673.
- Rouvier's L'Enseignement public en France au début du XXe siècle.—A. C. ARMSTRONG, 415.
- Royce on The Relation of the Principles of Logic to the Foundations of Geometry.—T. DE LAGUNA, 357.
- RUSSELL, JOHN E.—Baldwin's Thought and Things or Genetic Logic, 712.
- The Pragmatist's Meaning of Truth, 599.
- Russell on Some Difficulties in the Theory of Transfinite Numbers and Order Types.—H. C. BROWN, 388.
- Russell, Poincaré on Les mathématiques et la logique and, on La relation des mathématiques à la logistique.—W. H. SHELTON, 246.
- Russell's, The Meaning of Identity, Similarity and Nonentity: A Criticism of Mr., Logical Puzzles.—W. P. MONTAGUE, 127.
- Salvadori's, Del Vecchio's I presupposti filosofici della nozione del diritto and, Das Naturrecht und der Entwicklungsgedanke.—W. T. BUSH, 299.
- SANTAYANA, G.—The Efficacy of Thought, 410.
- Santayana's Reason in Science.—A. W. MOORE, 469.
- Santayana's The Life of Reason or The Phases of Human Progress.—A. W. MOORE, 211.
- Schaefer on Die Erzeugung physikalischer Kombinationstöne mittels des Stentortelevhons.—E. B. HOLT, 25.
- SCHILLER, F. C. S.—Idealism and the Dissociation of Personality, 477. ✓
- Is Absolute Idealism Solipsistic? 85.
- Joachim's The Nature of Truth, 549.
- Thought and Immediacy, 234.
- Schiller on Empiricism and the Absolute.—W. L. RAUB, 80.
- Schiller on Faith, Reason and Religion.—W. H. JOHNSON, 189.
- Schultz's Das Farbenempfindungssystem der Hellenen.—R. S. WOODWORTH, 21.
- Science, Metaphysics, or Art.—B. C. EWER, 545.
- Metaphysics, or Art.—K. GORDON, 604.
- Self as a Developed Feeling Complex.—E. A. NORRIS, 511.
- Sewall's Reason in Belief or Faith for an Age of Science.—J. M. STERRETT, 578.
- SHELDON, W. H.—Poincaré on Les mathématiques et la logique and Russell on La relation des mathématiques à la logistique, 246.
- The Quarrel about Transcendancy, 180.
- Sherren, Head, Rivers and, on The Afferent Nervous System from a New Aspect, and Head and Sherren on The Consequences of Injury to the Peripheral Nerves in Man.—S. I. FRANZ, 271.
- SHOREY, PAUL.—Stewart's The Myths of Plato, 495.
- Similarity, The Meaning of Identity, and Nonentity: A Criticism of Mr. Russell's Logical Puzzles.—W. P. MONTAGUE, 127.
- Solipsism, Why, is Rejected.—W. B. PITKIN, 344.
- Solipsistic, Is Absolute Idealism?—F. C. S. SCHILLER, 85.
- Space and Reality: I. Ideal or Serial Space; II. Real Space.—J. E. BOODIN, 533, 589.
- SPAULDING, EDWARD G.—Duhem's La théorie physique; son objet et sa structure, 606.
- The Ground of the Validity of Knowledge: I., 197; II., 257; III., 309; IV., 371.
- Spencer's 'First Principles: Part I., The Final Edition of.—F. C. BROOKER, 287.

- Stern on Die Pseudomotorische Funktion der Hirnrinde.—E. B. HOLT, 81.
- STERRETT, J. MACBRIDE.—Sewall's Reason in Belief or Faith for an Age of Science, 578.
- Sterrett's The Freedom of Authority: Essays in Apologetics.—E. L. NOR-
TON, 239.
- Stewart's The Myths of Plato.—P.
SHOREY, 495.
- STOOPS, J. DASHIELL.—The Moral In-
dividual, 141.
- STUART, H. W.—Veblen on The Place
of Science in Modern Civilization,
385.
- SUMNER, FRANCIS B.—Berthelot on Le
Darwinisme n'est pas l'Evolution-
nisme, 243.
- SWENSON, DAVID F.—Lovejoy on
Kant's Reply to Hume, 333.
- TAUSCH, EDWIN.—The Interpretation
of a System from the Point of
View of Developmental Psychol-
ogy, 90.
- TAWNEY, G. A.—Kleinpeter's Die
Erkenntnistheorie der Naturfor-
schung der Gegenwart, 687.
- The Nature of Consistency, 113.
- Two Types of Consistency, 457.
- Telephone (The) and Attention Waves.
—G. L. JACKSON, 602.
- Thought and Immediacy.—F. C. S.
SCHILLER, 234.
- Feeling as the Object of.—K. GOR-
DON, 123.
- Imageless.—R. S. WOODWORTH, 701.
- Revealed as a Feeling Process in In-
trospection.—E. A. NORRIS, 225.
- The Efficacy of.—G. SANTAYANA,
410.
- The Function of.—A. W. MOORE,
519.
- Transcendancy, The Quarrel about.—
W. H. SHELDON, 180.
- Truth, The Pragmatist's Meaning of.
—J. E. RUSSELL, 599.
- TURNER, WILLIAM.—Gossard on Linéa-
ments d'une synthèse scolastique
des moeurs, 417.
- 'Unconscious Cerebration,' Should We
still Retain the Expression, to
Designate Certain Processes con-
nected with Mental Life?—A. H.
PIERCE, 626.
- Unity and the World Ground.—J. H.
FARLEY, 651.
- Veblen on The Place of Science in
Modern Civilization.—H. W.
STUART, 385.
- Virgil's Il sentimento imperialista.—
W. B. PITKIN, 557.
- WASHBURN, MARGARET FLOY.—The
Term 'Feeling,' 62.
- WELLS, FREDERIC LYMAN.—Linguistic
Ability and Intellectual Efficiency,
680.
- Linguistic Standards, 431.
- Western Philosophical Association,
Sixth Annual Meeting of.—A. O.
LOVEJOY, 318.
- Weygandt, Philippe and Boncour on
Les anomalies mentales chez les
écoliers and, on Leicht abnorme
Kinder and on Idiotie.—S. I.
FRANZ, 190.
- WILDE, NORMAN.—Crawford's The Phi-
losophy of F. H. Jacobi, 104.
- De Laguna on Stages of the Discus-
sion of Evolutionary Ethics, 136.
- WOODBIDGE, FREDERICK J. E.—Lec-
tures on the Method of Science,
692.
- WOODWORTH, R. S.—Imageless Thought,
701.
- Schultz's Das Farbenempfindungs-
system der Hellenen, 21.
- Section of Anthropology and Psy-
chology of the New York Academy
of Sciences, 16, 267, 351.
- World Ground, Unity and the.—J. H.
FARLEY, 651.
- Yale Meeting of Experimental Psy-
chologists.—J. W. BAIRD, 381.
- YERKES, ROBERT M.—Flechsig on Hirn-
physiologie und Willenstheorien,
134.
- Jennings's Behavior of the Lower
Organisms, 658.

ERRATA

Page 71, line 14 from bottom, for 'Fränklein,' read 'Fräulein.'

Page 319, line 3 from bottom, read: their empirical qualities. If there
are, etc.

J. index

GENERAL LIBRARIAN
UNIV. OF MICH
DEC 22 1906

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY

AND

SCIENTIFIC METHODS

VOL. III. No. 26: DECEMBER 20, 1906

CONTENTS

<i>Imageless Thought</i> : R. S. WOODWORTH.....	701
<i>Snap Shot of a Dream Drama</i> : THOMAS P. BAILEY.....	708
<i>Discussion:</i>	
<i>Mr. Pitkin's Refutation of 'Radical Empiricism'</i> : WILLIAM JAMES	712
<i>Reviews and Abstracts of Literature:</i>	
<i>Baldwin's Thought and Things or Genetic Logic</i> : JOHN E. RUSSELL	712
<i>Hight's The Unity of Will: Studies of an Irrationalist</i> : ROBERT MORRIS OGDEN.....	715
<i>Arnold's Psychology Applied to Legal Evidence</i> : WALTER B. PITKIN	718
<i>Journals and New Books</i>	720
<i>Notes and News</i>	721
<i>Index to Volume III.</i>	722

PUBLISHED FORTNIGHTLY BY
THE SCIENCE PRESS
LANCASTER, PA.
AND
NEW YORK: SUB-STATION 84

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

All communications to the Editors should be addressed to **PROFESSOR FREDERICK J. E. WOODBRIDGE**, or **DR. WENDELL T. BUSH**, Columbia University, New York City.

Subscriptions and advertisements should be sent to the **SCIENCE PRESS**, Lancaster, Pa., or Sub-Station 84, New York City. The annual subscription price (twenty-six numbers) is \$3.00 and the charge for single numbers is 15 cents. Advertising rates will be forwarded on application.

Entered as second-class matter, January 19, 1904, at the Post Office at Lancaster, Pa., under Act of Congress of March 3, 1879.

ARCHIVES OF PSYCHOLOGY

Editorial communications should be addressed to **Professor R. S. WOODWORTH**, Columbia University, New York City.

Subscriptions and advertisements should be sent to **ARCHIVES OF PSYCHOLOGY**, Sub-Station 84, New York City. The subscription price is five dollars a volume containing between six and seven hundred pages. The numbers are as follows:

1. The Psychology of Mentally Deficient Children: **NAOMI NORSWORTHY**.
2. Empirical Studies of the Theory of Measurements: **EDWARD L. THORNDIKE**. *In press*.

This series is a continuation of the psychological part of the **Archives of Philosophy, Psychology and Scientific Methods**, of which one volume was issued, comprising the following numbers:

1. Measurements of Twins: **EDWARD L. THORNDIKE**. 50 cents.
2. Avenarius and the Standpoint of Pure Experience: **WENDELL T. BUSH**. 75 cents.
3. The Psychology of Association: **FELIX ARNOLD**. 50 cents.
4. The Psychology of Reading: **WALTER F. DEARBORN**. \$1.00.
5. The Measurement of Variable Quantities: **FRANZ BOAS**. 50 cents.
6. Linguistic Lapses: **F. L. WELLS**. \$1.00.
7. The Diurnal Course of Efficiency: **H. D. MARSH**. 90 cents.
8. The Time of Perception as a Measure of Differences in Sensations: **VIVIAN A. C. HENMON**. 60 cents.

LIBRARY OF PHILOSOPHY, PSYCHOLOGY AND SCIENTIFIC METHODS

EDITED BY **PROFESSOR J. MCKEEN CATTELL**

Theory of Mental and Social Measurements: **EDWARD L. THORNDIKE**. \$1.50.

Science and Hypothesis: **HENRI POINCARÉ**. Translated by **GEORGE BRUCE HALSTED**, with an Introduction by **JOSIAH ROYCE**. \$1.50.

THE SCIENCE PRESS

SUB-STATION 84

NEW YORK CITY

The Journal of Philosophy Psychology and Scientific Methods

There is no similar journal in the field of scientific philosophy. It is issued fortnightly and permits the quick publication of short contributions, prompt reviews and timely discussions. The contents of the last five issues are as follows.

Volume III. No. 21. October 11, 1906.

Psychological Opportunity in Psychiatry. SHEPHERD IVORY FRANZ.
The Given Situation in Attention. FELIX ARNOLD.
Emotional Expression and the Doctrine of Mutations. A. H. PIERCE.
Discussion: The Mad Absolute of a Pluralist. WILLARD C. GORE.
Reviews and Abstracts of Literature. Journals and New Books. Notes and News.

Volume III. No. 22. October 25, 1906.

Space and Reality: II. Real Space. JOHN E. BOODIN.
The Pragmatist's Meaning of Truth. JOHN E. RUSSELL.
The Telephone and Attention Waves. GEORGE L. JACKSON.
Discussion: Metaphysics, Science or Art. KATE GORDON.
Reviews and Abstracts of Literature. Journals and New Books. Notes and News.

Volume III. No. 23. November 8, 1906.

The Knowledge of Past Events. RALPH BARTON PERRY.
Should We still Retain the Expression 'Unconscious Cerebration' to Designate Certain Processes connected with Mental Life? A. H. PIERCE.
Reviews and Abstracts of Literature. Journals and New Books. Notes and News.

Volume III. No. 24. November 22, 1906.

A Problem of Evidence in Radical Empiricism. WALTER B. PITKIN.
Discussion: Unity and the World Ground. J. H. FARLEY.
The Mad Absolute. WILLIAM JAMES.
Reviews and Abstracts of Literature. Journals and New Books. Notes and News.

Volume III. No. 25. December 6, 1906.

A Definition of Experimentation. FRANCES HALL ROUSMANIERE.
Linguistic Ability and Intellectual Efficiency. FREDERIC LYMAN WELLS.
Reviews and Abstracts of Literature. Journals and New Books. Notes and News.

**THE JOURNAL OF PHILOSOPHY
PSYCHOLOGY AND SCIENTIFIC METHODS
Sub-Station 84, New York City**

\$3.00 per annum (26 numbers)

15 cents per copy

The Subconscious

By **JOSEPH JASTROW**

"At once scientific and popular . . . lucid, comprehensive and many-sided. The book is timely, will be welcomed and read by every psychologist in the land."—*American Journal of Psychology*.

"This exploration of the sub-conscious is in the same quiet and common-sense style as Professor Jastrow's 'Fact and Fable in Psychology,' always maintaining a vigor of analysis and purpose."—*Hartford Courant*.

\$2.50 net. Postage 16 cents.

Harvard Psychological Studies

Edited by **HUGO MÜNSTERBERG**

Forty experimental researches carried on at the Harvard Psychological Laboratory under Professor Münsterberg's direction.

"A significant contribution to an important phase of American scholarship."—*The Dial*.

In two volumes, \$6.00, net. Postage 70 cents.

Studies in Philosophy and Psychology

By former students of

Professor CHARLES E. GARMAN of Amherst

"Thirteen papers full of individuality and independence of thought. . . . A noble tribute to a great teacher."—*The Outlook*.

With portrait. \$2.50, net. Postage 24 cents.

HOUGHTON, MIFFLIN AND COMPANY

4 Park St., Boston ; 85 Fifth Ave., New York

NOW READY. THE SECOND EDITION, THOROUGHLY REVISED
AND CORRECTED WITH PORTRAIT OF THE AUTHOR

SPECIES AND VARIETIES:

THEIR ORIGIN BY MUTATION

BY **HUGO DE VRIES**

Professor of Botany in the University of Amsterdam.

EDITED BY **DANIEL TREMBLY MACDOUGAL**

Assistant Director of the New York Botanical Garden.

Cloth, gilt top, xviii + 847 pages.

Price, postpaid, \$5.00 (21s)

"Prof. de Vries may well be regarded as the foremost advocate of experimental evolution, the man, moreover, who gave us the mutation theory of organic evolution. The volume before us is a splendid scientific plea for the experimental study of organic life."—*Scientific American*.

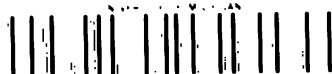
"It will be seen that Professor de Vries has made an important contribution to science and thought. It is a masterly work and it is attractive because of the popular style in which the experiments are described and the conclusions stated. Every student of science will welcome it."—*The Scotsman*, Edinburgh.

THE OPEN COURT PUBLISHING COMPANY

1322 WABASH AVENUE, CHICAGO



39015 02458 5146



3 9015 02458 5146

NOTHING
TO
DO